EXTERMINATORS LOG

SEPTEMBER 1937 "Don't Tolerate - Exterminate" VOL. 5, NO. 9

HERE'S THE WAY

TO SAFER, MORE ECONOMICAL HCN GAS FUMIGATION

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IT IS SAFER because all the fumigating gas is generated in the apparatus outside the building or premises to be fumigated. No one has to be in the structure until time for ventilation. It is economical, for the HCN Gas is generated hot from CYANEGG* (du Pont Sodium Cyanide 96% minimum), the most economical source of HCN Gas.

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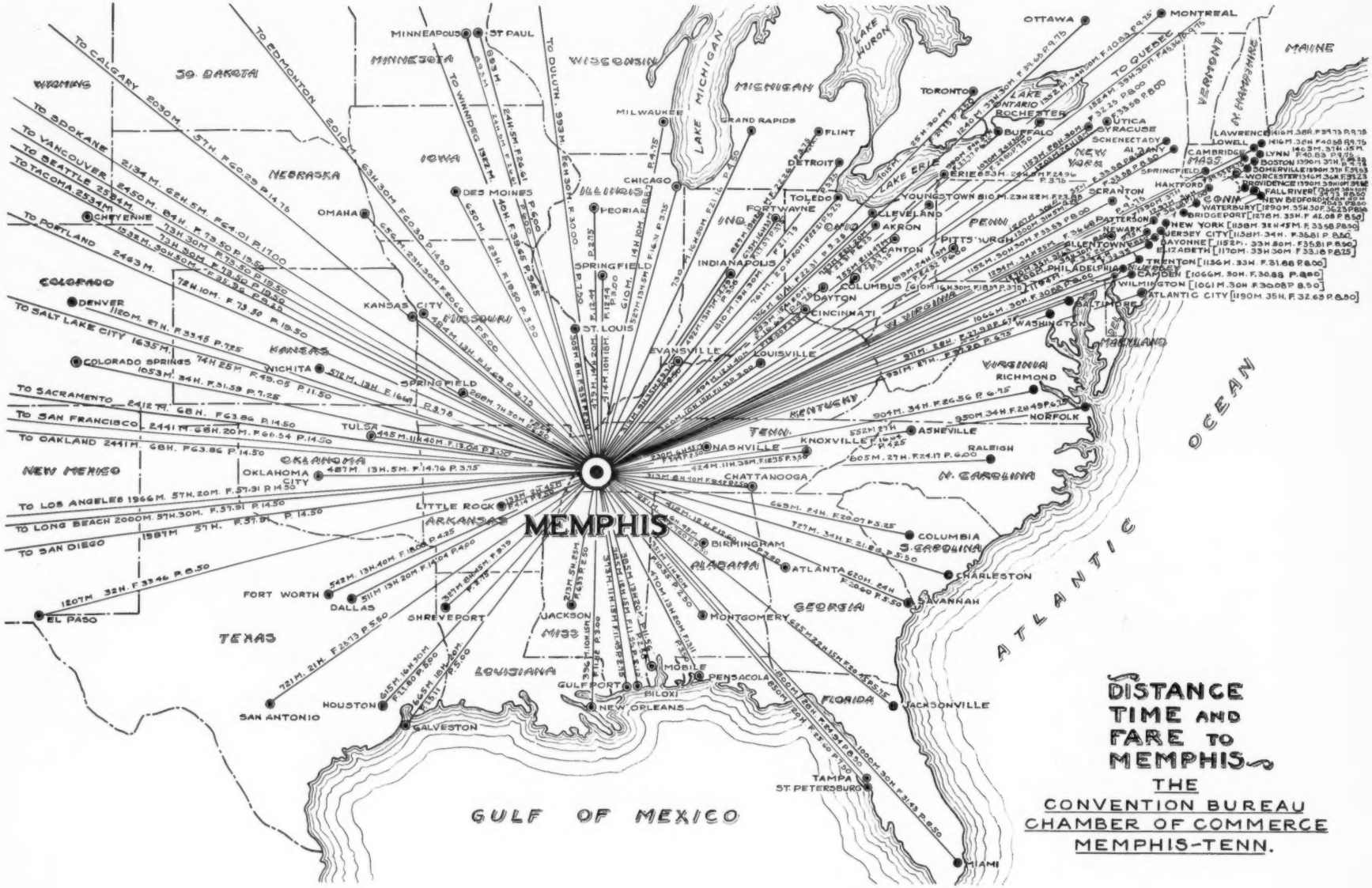
MOUTHPIECE OF THE EXTERMINATING AND FUMIGATING INDUSTRY OF AMERICA

The Convention City

MEMPHIS

October 25-26-27



EXTERMINATORS LOG

A Magazine Devoted to a Cause to Which Mankind Is Indebted

Al Cossetta, Manager and Editor | J. W. Smith, Associate Editor

Cooperating with the National Association of Exterminators and Fumigators, Inc.

VOL. 5 | SEPTEMBER, 1937 | No. 9

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ACTIVE: Open to any person, firm, association or corporation engaged in the service business of eliminating and/or controlling vermin, rodents, insects, germs, other pests and odors by the process of extermination, fumigation and/or disinfection. Dues $10.00 yearly.

Associate: Open to subsidiary firms of an active member firm engaged in the service work as above described. Dues $7.50 yearly.

Allied: Open to any person, firm or corporation, manufacturing or supplying products and/or materials for use in the exterminating and/or fumigating service trade. Dues $10.00 yearly.

For further details, communicate with

WILLIAM O. BUETTNER, Secretary
3019 Fort Hamilton Parkway Brooklyn, New York

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Editorial

Come to Memphis

IT IS just a matter of a few more weeks before Pest Control Operators and others throughout the country will be on their way to Memphis to meet at Hotel Peabody.

A hearty welcome is extended to all to come to the National Convention. An exceptional program is being arranged and will exceed anything heretofore experienced. We assure you that the three days in Memphis will be interesting ones, full of business and pleasure as well as attaining greater knowledge of the industry. At the convention you may feast at the educational and inspirational round table conferences which will provide an exchange of ideas that will make them the most valuable assets to your business.

You can't afford to miss Memphis. It is your golden opportunity to secure such valuable and important information and knowledge for carrying on your service operations. Plan to come to Memphis and enjoy the pleasure that will be yours.

Advertising

ONE of our readers sent us copy of a letter written to Mr. Harry J. Hammond, Chairman of the National Association Convention, to be held at Memphis, Tenn., October 25, 26, and 27. He wrote:

> *"I feel that many of our offenders in the matter of advertising are men who are doing the best they can, and are advertising in terms which seem to them will bring the best results; in other words, I do not feel that all of this bunk advertising, as we call it, is done maliciously, but is done through a lack of proper understanding of the class of advertising which would bring results.*
>
> *"I feel, therefore, that we could do a little missionary work and try to help some of our boys to see the light. Along this line, I would suggest that a good speaker of national reputation, if possible, should be secured to speak at the convention on a subject such as 'Truthful Advertising', or 'Advertising That Pays'."*

It is expected that the committee on Advertising will have an interesting report in that Walter McCloud of Chicago, Ill., Chairman, has been working on material which is to be brought before the convention for consideration and action.

There is a woeful lack of knowledge on the part of the officials in charge of classified telephone directories as well as the firms of the Pest Control Industry with regard to "objectionable copy." It is expected that a list of objectionable phrases, clauses, claims, and other material appearing in advertisements will be presented to the membership of the National Association for study and upon further recommendation be submitted to officials of telephone classified directories and others to put a stop to such advertising and thus have the public realize that better Pest Control Operators are scrupulous as to claims being made.

Is a Price List the Solution?

DURING the five years the National Association has been functioning in the interest of pest control operators, those who have been entrusted with the conduct of business and correspondence of the Association have contacted hundreds of pest control operators throughout the country. In the experience of these few short years, much has been learned as to what pest control operators think and desire.

One idea advanced is that there is a feeling or tendency on the part of some that there should be some sort of a uniform price schedule, or at least a common understanding as to what constitutes a legitimate price. Some feel that a **set price list** for various types of services would be a panacea for eliminating cut-throat competition. Others have felt that the National Association should assume the initiative to suggest a workable schedule. It can be assumed that those who desire such plan have not realized the many ramifications involved as well as the ultimate outcome of such a plan. We feel that a **set price list** for pest control operators to follow cannot be easily "set-up." There are more barriers than one realizes as such suggestion is glibly made. No matter how much a price list may be needed, such plan would bring about more jealousy; more suspicion; more criticism; in fact, the futility of the plan begins to take shape as one sits down to work out a concrete plan. There are certain things that we cannot contravene when it comes to different nature of jobs as well as varying circumstances surrounding individual jobs.

Operators would more frequently run into difficulties when it comes to the question of endeavoring **to fix a set price** as to what one should charge for certain types of services. It has been proven that when such plans are put in force, the sequence is the humiliating experience of seeing the well intentioned schedule disregarded. Ask those in Cleveland, Buffalo and Denver. One cannot force a person to adhere to a price schedule without becoming legally involved or other barriers that help to break down what has been made a **set price schedule.** Even though such schedule should be in force, human nature being what it is, some expediency arises which gives an individual sufficient feeling or excuse for such so as to claim justification for breaking away from what was to be a schedule, strictly to be observed.

Far greater in importance than a "price schedule" is the need of improving our methods of operation, of enlarging our understanding, and of becoming more proficient in carrying out our work promises and service to the public, not to forget the need of cooperation with and among our competitors. Above all when it comes to the suggestion of prices it is the crying need for pest control operators **to understand** and **to know** all that enters into the costs. "Cost Analysis" comes nearer to a solution than any universal price schedule. Altogether too many firms measure work in terms of gross receipts for all jobs rather than appraising fully the individual jobs as to profit and loss. If there is a little money in the bank at the end of the month, one thinks himself successful. Every pest control operator has a few "plums"—good paying accounts—and more often than not these desirable jobs are paying losses on other jobs many times taken "to beat" a competitor. This nonsense should stop. Every time an individual job is taken below cost, it reflects on the prices charged for other work.

We have even heard rumors of companies setting-up other companies (subsidiaries—secret companies—a friend dummy to have his name appear, etc.) so that if a job is lost to one company, the so-called secret company underbids further so as to take the job away from the original competitor. Such plan has a viciousness that should be broadcast from the house tops as such is discovered. The Association should study alleged cases of this kind and should in no uncertain terms give names and facts. We rather feel that the Association will be fearless in pronouncing publicly any proven cases. The poem that appeared in the August issue "The Measure of A Man" brings home the truth in a very forceful way; namely, the need of working together even though the competitor is never even met. We offer to the pest control operators these candid thoughts and hope these remarks will cause reflection.

The National Association is working for the best interests of the industry and will continue, we are sure, with a thorough study of this problem. The Association intends, however, to go slowly and thus avoid pitfalls that would inevitably follow by making premature moves. For the present it is urged that every firm rigidly set up "cost analysis" for every job and stop kidding themselves that a universal "price schedule" is the panacea of all ills. It might be well to reflect upon the Code of Ethics of the National Association.

CODE OF ETHICS

(a) RELATION OF PEST CONTROL OPERATOR TO CLIENT: The Pest Control Operator shall thoroughly analyze the service requirements of his clients, and shall conscientiously recommend the methods best suited for their needs.

(b) PROFESSIONAL SERVICES: Acceptance by a Pest Control Operator of a contract or service agreement imposes the obligation of rendering skilled, intelligent, and conscientious service.

(c) THE ASSOCIATION: In the interest of society, of his associates, and his own business, the Pest Control operator shall

be loyal to the principles of the National Association and active in its advancement; and he should willingly share with his fellow members the benefits of his experience.

(d) CRITICISM OF A COMPETITOR: A Pest Control Operator should not publicly criticize a competitor, nor any of his agents, nor express an opinion of a competitor's business or private affairs.

Perhaps This Might Be a Little Caustic

NEW classified telephone directories are making their appearance and it is always of interest to read the advertisements and claims made by the firms with regard to their responsibility, guarantees and other promises. It is not our purpose to review the phrases that are appearing or even mention them. We are only too well acquainted with such claims as "100% kill guaranteed or your money back"; "Bedbugs, roaches, rats, mice, fleas, ants, moths expertly exterminated in 4 hours"; "Fumigations done while you remain at home," etc. Some day the industry might wake up to the fact that the public is beginning to read through this 'teaser' type of advertising. The better firms of the industry might well take time out to indicate that this kind of advertising attempts to tell only part of a story.

Our thoughts, however, are running along an entirely different channel at the moment. We have in mind more the general emphasis that firms seem to place upon their responsibility as clients give consideration to have possible work done. A guarantee, a promise and responsibility in the last analysis might be summed up in saying that any and all of these claims are only as good as the individuals that comprise the firms. What, however, is there behind the firm financially that can make such claims so boldly? Will the firm stand up under the investigation that might arise through a report requested from Dun and Bradstreet? Someone stated a brief time back that our industry, taken as a whole, discloses no financial standing in that it is possible to obtain no more than approximately 3% as far as reports from Dun and Bradstreet is concerned. One might further read into this that many firms have not even a bank account that can be given as reference. In fact, in one city where all sorts of claims are made as to responsibility, several operators carry their "bank account" in their pockets; that is to say, they have no bank account. If anything goes wrong, it is fair to assume that there is not a single tangible asset that could be applied and yet these firms continue to emphasize their responsibility and financial standing. It is true that firms think in terms of setting up a reserve especially when guarantees are offered the public.

It is our intention to provoke severe criticism for being so bold as to bring up this subject. We feel justified in calling a spade a spade and look for the time when sufficient pressure will be brought to bear whereby telephone classified directories will use more caution in permitting certain copy to appear.

TERMITES—A Correction

IT IS always gratifying to have an author of an article assume full responsibility for an error because quite frequently the magazine or newspaper generally states that typographical errors were made. Dr. William F. Clapp's article "What To Do About the Termite" published in August, contained an error.

We have received a letter from Dr. Clapp under date of August 20 which reads as follows:

"It has been brought to my attention that an unintentional exaggeration appears in the Termite article which you have recently published in the "Exterminator's Log." I have not seen this article but believe that it states that FREE Termite tubes may be built UP from the ground to a height of three or four feet. There is no authentic record of FREE tubes of such length being ERECTED and the statement should be corrected. I accept full responsibility for the error and trust that you will accept my apology for having carelessly allowed the exaggeration to escape my notice. A one-foot free tube built up would probably be the maximum height."

We are pleased to publish this correction.

Another Slant on Advertising

WE HAVE no illusions that perfection in advertising will ever be reached but we do believe that a much finer, higher type of advertising will be attained than that which prevails at present. Much has been written and spoken on the subject and it is gratifying to note a general improvement. We still see flagrant evidences of extremes in advertising here and there.

It seems hard to eradicate from the minds of some the idea that in order to induce confidence and get jobs, it is necessary to promise far more than can ever be accomplished. To illustrate our point:

Not long ago two men consulted different doctors for a similar ailment. One man was promised complete restoration of his health in four weeks' time. The other man was promised an ultimate restoration of his health, perhaps in one year's time, but with gradual improvement and not one jump back to normalcy. The first doctor felt that he could gain the patient's confidence by his initial promise, and that when some improvement had occurred in a month the patient would be satisfied even though complete restoration was months away. He figured that some improvement would be so encouraging that the patient would forget all about the extreme promise. But the patient remembered and was bitterly disappointed at his slow recovery and lost confidence in his doctor. The other patient made the improvement the doctor promised (the promise was possible of fulfillment), and his confidence in his doctor was increased.

The quality of their work and their ability may have been the same but one doctor disregarded the element of confidence while the other doctor considered his reputation and the confidence of his clientele.

The same holds true with Pest Control Operators. Confidence of the public is obtained by careful, honest advertising. The Pest Control Operator who desires to remain in business with suitable growth from time to time, builds, not on a foundation of flimsy promises but on the firm foundation of confidence won by making promises he can keep, and keeping the promises he makes. Confidence, without which no business can long endure, depends in large measure on fulfilled promises and reasonable claims that can be substantiated.

We believe eventually every reliable Pest Control Operator will eliminate from his advertising, false, preposterous and unwarranted claims that are impossible of fulfillment. Further, we believe that eventually it will be possible to classify Pest Control Operators by their advertising; that is, if reliable, it will be ethical—if unreliable, it will be bristling with extreme statements, false claims, and impossible promises.

Is this too much to hope for?

Reserve your display space NOW for a choice location. Gain real prestige, and sales, for your products at our coming convention.

Annual Convention Just Around the Corner

National Association Invites All to Attend at Memphis, Tenn., October 25, 26 and 27

THE National Pest Control Association (formerly called National Association of Exterminators and Fumigators) anticipates a larger attendance than ever at the Fifth Annual Convention to be held at Hotel Peabody, Memphis, Tenn., October 25-26-27. Judging from the correspondence received and general interest displayed it almost seems a safe prediction to think in terms of the "Best Yet" and that is saying a great deal when it is considered that all of the previous conventions were considered the "Best," etc. One naturally begins to wonder why each succeeding convention is better. The answer is simple enough. Pest Control Operators realize the importance of being fully qualified to perform proper work; to do the latest developments; to talk with others in the industry; to exchange points of view; to improve themselves intellectually. The Association is serving as an invaluable clearing house for the industry and through the many individual letters which take up problems and other business details as well as the educational service letters to the membership, pest control operators know how important it is to keep abreast of the times. The one outstanding event that is open to the entire industry regardless of membership in the Association is the annual convention. It is, therefore, natural that many attend for the first time and the vast majority have not missed a single convention. If any of our readers have not attended, again a cordial invitation is extended.

In a nutshell what is the program this year? There will be three principal addresses. Mr. Lee A. Strong, Chief of Bureau of Entomology, United States Department of Agriculture will address the convention on, "Cooperation of the Bureau of Entomology with Pest Control Operators." Dr. Thos. E. Snyder will talk on "The Termite Problem and Recent Research" followed by questions and answers. Dr. Snyder hardly needs any introduction to the industry and as Senior Entomologist, Forest Insect Investigations, has spent many years in specialization work with Termites. Ernest Barber will discuss "The Necessity of Keeping Accurate Records in the Work of Pest Control."

The "CLINICS" are being given greater emphasis than ever and this year the Association is fortunate in having Prof. J. J. Davis, Chief in Entomology, take over the chairmanship or more properly termed "Dean of the Clinics." There will be four clinics only this year so that greater time can be given; namely, "Termites," "Rats and Mice," "Ants and Silverfish" and "Moths." Many have asked what is meant by the clinics. Under the direction of Prof. Davis for each "Clinic" there is a group of leaders who have either been successful in the control of the pest involved or who have made exhaustive study as to chemicals and treatment. The group in charge of each clinic will be made up of an outstanding member of the industry, leading entomologists, and representatives of manufacturers and supply houses who will endeavor to answer any questions that may be asked by the assemblage. Problems are especially encouraged. To make these clinics even more worthwhile, it is requested that any firm in the industry submit as soon as possible to the office of secretary (3019 Ft. Hamilton Parkway, Brooklyn, N. Y.), any question or problem that may confront the operator. It is not essential to give your name or address and in any event, your name will not be used if it is your desire that it should not be used. Such questions and problems as are submitted in advance of the convention will be mimeographed and ready for distribution at the convention and the solution of them discussed. It is said that several who attended the previous conventions have saved themselves hundreds of dollars by the information obtained. At this writing, it is not the purpose of giving the complete program of Clinic Leaders but among those expected to take part are: Dr. E. A. Back, Dr. W. P. Flint, W. E. McCauley, Dr. Al Weed, George B. Chapman, Charles E. Denny, C. Norman Dold, Wilbur F. Smith, R. L. Alderman, G. C. Oderkirk, C. A. Vincent-Daviss, Thos. Darling, Arthur Srebren, George Hockenyos, E. F. Seenewald, Miss Olive Falls, Dr. W. G. Campbell, R. A. St. George, Dr. A. E. Roark, and others. The complete program will appear in the October issue of The Log.

These are the general problems that confront the industry as a whole in the sense that it concerns interrelationship of competitors as well as consideration of the public and officials of city, state and national government. The important subjects of Legislation, Insurance, Ethics, Contract or Agreement Forms, Advertising, Standards (materials and methods), and subjects of this kind will be given a chance for discussion.

Ample provision has also been made for entertainment. The ladies will find a royal welcome at luncheons, sight-seeing trips, and other features. Each evening is given over to fun. Monday evening in part will be taken up with movies and other enjoyable features; on Tuesday evening will come the famous "Pot Pourri" with Jug Band of Dancers Ten Spiritual Singers, Blues numbers, and the "Bug Boys Amateur Night" headed by Louis Gatto of Beaver Falls, Pa., and others of the industry and an orchestra to provide music from 10 P. M. until 1:00 for those who enjoy dancing. At the banquet Wednesday evening there will be eight girl artists and a group of men who will provide 14 acts.

During the month of September special announcements will be sent by the Association so that those attending might make reservations for rooms at Hotel Peabody. The rates are:

(A) Room for one $3.00, $3.50, $4.00, $5.00.

(B) Room for two (one double bed) $4.00, $5.00, $6.00, $7.00.

DON'T FORGET

To order that unusual book by sending your present or future subscription to The Log. By this time all have read about the Joke Book by Prof. J. J. Davis of Purdue University.

Believe it or not, this is one offer that the pest control operator or entomologist should not pass by. The book alone is worth many times the price of the subscription.

Remember! You must mail your subscription now before it is too late.

(C) Room for two (twin beds) $6.00, $7.00, $8.00.

(D) Parlor Suites (parlor and bed room) ranging from $7.00 to $25.00.

We wish it were possible to describe adequately the spacious rooms and splendid accommodations that are provided at Hotel Peabody.

Martin Meyer who is in charge of transportation has issued the following bulletin:

ON TO MEMPHIS AND HOW!

We are all looking forward to October 25, 26, 27, when we will get together at Memphis, Tenn., down in Dixie, for another very profitable Convention. Some of us, however, have wondered how to get there and how much it is going to cost. We are listing the suggested routes of travel by rail, water, motor and air. Doing this will permit all to make adequate arrangements. The "Committee on Travel" will be pleased to give further information if any will write to 213 South 10th Street, Philadelphia, Pa.

Rail

In most cases those attending the Convention will find it most convenient and economical to travel as follows:

For those coming from Eastern Canada, New England, and along the Atlantic seaboard as far south as Virginia, take the Birmingham Special leaving New York 12:30 P. M. Saturday via Pennsylvania Railroad; Washington 4:55 P. M. Southern Railway, which arrives in Memphis on Sunday evening at 6:15 P. M. Those who care to go later may leave New York 12:45 midnight Saturday on the Memphis Special; Washington at 7:25 A. M. Sunday, arriving at Memphis 7:20 A. M. Monday via the same route as above indicated.

This scenic ride from Washington will be by way of the mountains of eastern Tennessee, skirting the "Great Smokies" to Chattanooga, past Muscle Shoals, and to Memphis. It is suggested that the return trip be broken up and allow for a day at Chattanooga to see Signal Mountain, Lookout Mountain, Chickamauga National Military Park and other sights; move on to Knoxville where it has been arranged that a special bus can meet the train so as to enjoy a one day tour of the western end of Great Smoky Mountains' National Park and bring us to Knoxville in time for the evening train. This can only be done provided there are sufficient interested in such stop-over. This service can be arranged for even a small number. Those interested should communicate with the writer as soon as possible. It is also possible to stop over at Roanoke, Lynchburg, Charlottesville, and other beautiful and historic spots on the return journey.

Special fifteen-day tickets are in effect from eastern points to Memphis, and rail and Pullman fares will gladly be quoted to those interested. Reservations in our special car must be made directly through the Committee on Travel, 213 S. 10th Street, Philadelphia, Pa.

Those from Chicago, Milwaukee, Twin Cities, Detroit, and other points easily accessible to Chicago, will board the Illinois Central's "Louisiane," leaving Chicago at 6:05 P. M. and arriving in Memphis the following morning at 8:20. We will try to have special cars on this train both Saturday night and Sunday night. Reservations can be made through Mr. C. Norman Dold, 6 East Lake Street, Chicago, Ill. The round trip ticket is good for thirty days. Fares will be quoted by Mr. Dold's office.

Those from Cleveland, Cincinnati, Buffalo, and other points readily accessible to Cincinnati, may leave that city 7:15 P. M. Eastern Time and 6:15 P. M. Central Time, arriving in Memphis 7:30 A. M. Those who expect to take this route please write the Committee on Travel as to which night they expect to leave Cincinnati. If there are sufficient requests, a special car will be provided. If there are not sufficient requests within a reasonable time prior to the Convention, those making inquiry will have their names turned over to the local representative of the Louisville and Nashville Railroad at Cincinnati, who will arrange for these reservations in the regular cars. There is also a fifteen-day ticket in effect from Buffalo, Cleveland, Cincinnati to Memphis. Incidentally, a stop-over will be permitted on the return journey at Bowling Green, Ky., to give an opportunity to visit Mammoth Cave.

From the Pacific Coast the official routing will be to leave Los Angeles 8:15 P. M. Thursday or Friday on the Southern Pacific's "Golden State Limited" connecting with the Rock Island's "Memphis-Californian" to arrive in Memphis at 6:45 A. M. Sunday or Monday. Reservations for special cars on this route will be taken care of by Mr. L. R. Alderman, 1811 E. Walnut Street, Pasadena, Calif. This route gives ample opportunity for sightseeing on the return journey; allowing those who desire to visit the oil fields of Oklahoma, and more particularly to stop over at El Paso, Texas, from which point daily trips are run to Carlsbad Caverns' National Park. Opportunity is also given

(Continued on page 8)

Welcome to

HOTEL PEABODY

NATIONAL ASSOCIATION OF EXTERMINATORS & FUMIGATORS, INC.,

CONVENTION—MEMPHIS, TENN.—OCT. 25-27

Please Use Blank for Reservation NOW

ROOM RATES

Every room equipped with combination tub and shower bath, running ice water and all modern furnishings.

TYPE

A—Room for one.
$3.00, $3.50, $4.00, $5.00

B—Room for two (one double bed).
$4.00, $5.00, $6.00, $7.00

C—Room for two (twin beds).
$6.00, $7.00, $8.00

D—Parlor suites (parlor and bedroom).
Ranging from $7.00 to $25.00

F. R. SCHUTT, Vice-Pres. and Gen. Mgr.
HOTEL PEABODY,
MEMPHIS, TENNESSEE.

Dear Sir:

Please reserve type.....room for.....person(s) at $.....rate.

If rooms at the desired rate are not available, we shall reserve a room at approximately the rate requested.

Name.....

Address.....

Date of Arrival.....

to cross the border into Old Mexico and stop-overs are permitted to Tucson, Phoenix, and other Arizona points permitting a trip over the Apache Trail and also to travel enroute to Los Angeles via Palm Springs and Indio.

Convenient routes from other cities:

From St. Louis, Denver and Kansas City via Missouri Pacific Lines, the following schedules are suggested:

Lv. St. Louis 8:30 A. M. Ar. Memphis 6:15 P. M.
Lv. St. Louis 1:50 P. M. Ar. Memphis 10:20 P. M.
Lv. St. Louis 10:50 P. M. Ar. Memphis 7:20 A. M.
(Sleeping car attached)
Lv. Denver 3:15 P. M. Ar. Kansas City 8:05 A. M.
Lv. Kansas City 8:15 A. M. Ar. Memphis 10:20 P. M.

From Kansas City and Birmingham, via Frisco Lines:

Lv. Kansas City 8:20 A. M. Ar. Memphis 9:10 P. M.
Lv. Kansas City 7 00 P. M. Ar. Memphis 7:30 A. M.
Lv. Birmingham 12:15 Noon Ar. Memphis 7 00 P. M.
Lv. Birmingham 11:15 P. M. Ar. Memphis 6:50 A. M.

If there are any who cannot conveniently fit any of the above suggestions into their itinerary, please write to the Committee for further details.

Water

The Clyde Mallory Lines from New York to Galveston is a six days' trip. From Galveston travel by way of Dallas or Fort Worth making a stop at the Texas Exposition and then to Memphis. Return again to New York. Round trip fare is $89.25 and the ticket is good for sixty days.

The same fare applies via Morgan Lines from New York to New Orleans, permitting sight-seeing in New Orleans, then via rail to Memphis and return to New York.

This fare also applies from certain eastern cities via rail from point of origin to New York, steamer to New Orleans or Galveston, and rail to Memphis and on to the point of origin.

Motor

Those traveling by automobile may have itineraries and road maps marked out and mailed to them by writing directly to Mr. J. E. Prizer, Keystone Automobile Club, Broad and Vine Streets, Philadelphia. Mr. Prizer and the Keystone Automobile Club will be pleased to render this service free of charge if you mention that you are attending the Convention of the National Association at Memphis. This generous and courteous service is open to everyone throughout the country. The only request that is made is that such requests for itineraries and maps be sent to Mr. Prizer after Labor Day.

Air

Memphis is on the Main Transcontinental route of the American Airlines, using Flagship planes which have sleeping berths on overnight service. The fare from New York is $62.10 one way and from Los Angeles, $98.10, with 10% discount allowed on round trips.

It is quite possible that details have not been as complete as some desire. Further inquiries will have the prompt attention of the Committee if addressed to Martin Meyer at 213 South 10th Street, Philadelphia, Pa.

Suggestion for those who want to have some more fun after the Convention. Both the Missouri Pacific Lines and the Rock Island Lines have train service to Hot Springs, Arkansas, the oldest national park in the Country. This is but a four hours' train trip from Memphis. Many will want to enjoy these baths.

The Insect Parade – Part V

By PROFESSOR HOWARD O. DEAY,
Department of Entomology, Purdue University, Lafayette, Ind.

Order Isoptera — The Termites

TERMITES are small insects that live in colonies and have a highly developed social life; that is, there are special forms or "castes" which perform certain tasks, as reproducing the young, securing the food and caring for the young, or guarding the colony. They have chewing mouthparts and incomplete metamorphosis, although the workers and soldiers change but little during their development. The kings and queens (the first form reproductives) have four fully developed wings which are white and of approximately equal size — the name Isoptera meaning equal wings. After the kings and queens pair off to form new colonies, they tear off their wings, there being a weak place across each wing near its base for this purpose. Wings that are shed in this manner instead of being retained throughout the life of the adult are called deciduous wings. The workers and soldiers and third form reproductives (see under castes below) are wingless, but the second form reproductives have partially developed wings or "wing pads."

Fig. 26—Termite soldier.

Termites are sometimes called "white ants," a name which should be discarded because it conveys the idea that termites are a special kind of ant or are at least closely related to our true ants, and also because not all termites are white. While it is true that the workers, soldiers and second and third form reproductives of our subterranean termites are of a yellowish or dirty white color, the winged forms, the ones most commonly seen by the householder are dark brown or black.

As for termites being "ants," they are not even closely related to them. As a matter of fact their closest living relatives are cockroaches. The true ants belong to the order Hymenoptera and are closely related to the bees and wasps. They have complete metamorphosis, that is, they pass through four stages in development — egg, larva, pupa and adult; the abdomen is sharply constricted just back of where it joins the thorax—in other words they are thread-waisted; and their front wings are much larger than the hind ones. The termites, on the other hand, have incomplete metamorphosis; the abdomen is not constricted where it joins the thorax — that is, they are broad-waisted; and the front and hind wings are of equal size. The ants and termites agree in that they are both social insects, but their social life differs in the number of castes and in the fact that in the termite colony the king and queen live together throughout life and mate repeatedly. While in the ant colony the male dies soon after mating and the new colony is founded by the queen alone.

According to Snyder there are 1978 species of Isoptera known today in the world. Sixty-three species of these are fossil or extinct forms which leaves 1915 living species. He also states that the species as yet undiscovered will raise the total number to approximately 5,000 kinds. There are

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Fig. 25—The termite workers are white and delicate, living in shelter tubes or burrows and never exposing themselves. About six times natural size. (After Snyder).

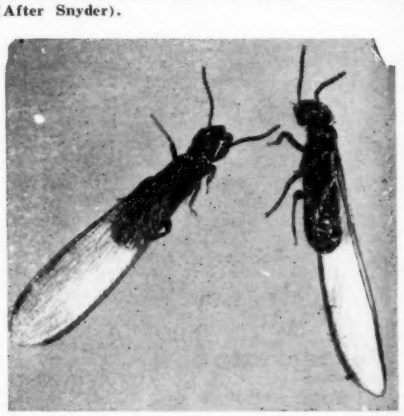

Fig. 27—The winged sexual termite adults are the only forms commonly leaving the nest or shelter tubes and usually migrate from the nests in the spring, to mate and establish new colonies. About six times natural size. (After Snyder).

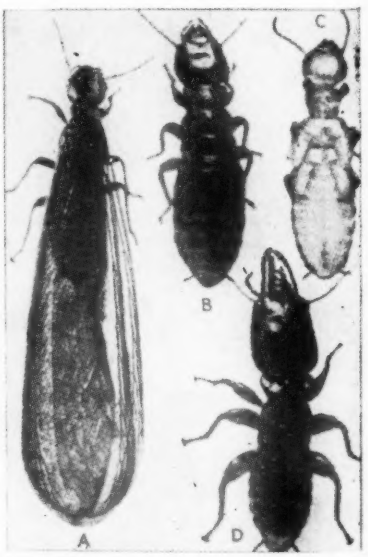

Fig. 28—Members of a termite colony; (a) winged reproductive-colonizing male or female; (b) late-growth stage of nymph, which will become soldier; (c) late-growth stage of nymph, which will become winged reproductive; and (d) soldier. All magnified several times.

five families of termites—Mastotermitidae, represented by but one living species which occurs in Australia; Hodotermitidae, Kalotermitedae, Rhinotermitidae and Termitidae. Species of the last three families are known to occur in the United States.

Termites are found everywhere except in the Arctic and Antarctic regions. Most of them occur in the tropics, more species being known from Africa than from any other continent. In North America they have been recorded as far north as British Columbia and Ontario, Canada.

In the United States 56 species, representing the last three families mentioned above, are known to occur. They have been reported from every state with the exception of North Dakota and they probably occur there. The greater number of species have, of course, been found in the South and the Southwest. Twenty species occur in Texas, 19 in California, 15 in Florida and lesser numbers in the other states—only one species commonly occurring in the northern states east of the Rocky mountains.

The family Kalotermitidae is represented in the United States by 22 species. They are our most primitive termites and occur in the southern and Pacific coast states. None of the Kalotermitidae are true subterranean termites, although they occasionally burrow into the earth near tree roots. The members of this family are divided according to their habits, into four groups: the rotten-wood termites, the dry wood termites, which do damage to buildings; the damp-wood termites, and the powder-post termites.

The family Rhinotermitidae, the subterranean termites, is represented in the United States by 13 species. Two members of this family, Reticulitermes flavipes, eastern subterranean termite, and R. hesperus, the Pacific coast subterranean termite, do most of the termite damage to buildings in this country.

Fig. 29—This sketch combines the sorts of conditions found to prevail in many localities where wood has been improperly used. Unprotected wood in or on the ground makes possible both settlement and rapid increase of the subterranean termites. Workings in stumps, poles, posts, sidewalks, and wood of buildings are shown in black, as are the galleries within the earth. A marks the supposed original point of entry of one of the colonizing pairs, and B the points of emergence of swarming alates at the proper season.

The members of the family Termitidae are the most specialized of our termites. None of the 22 species occurring here do economic damage to buildings, although they are all subterranean forms. The family is divided into three groups—the nasutiform termites (long-nosed termites), the desert termites, and the soldierless termites.

The members of the termite colony are not all alike but are of different shapes and sizes, depending upon the duties they have to perform. Most of our termites have three distinct types or castes of individuals—the workers, the soldiers, and the reproductives of which there may be three forms—the long winged or first form reproductives, the short-winged or second form reproductives, and the wingless or third form reproductives. Not all of the castes are present in all species. In some species there is more than one form of workers and soldiers present, and in the most primitive termites there are no workers and the most specialized have no soldiers. Both the workers and the soldiers are of both sexes, but are incapable of reproduction, thereby differing from ants in which these castes are of the female sex, and, although usually sterile, are sometimes capable of reproduction.

The eggs of termites are yellowish white and bean-shaped. In the eastern subterranean termite, egg laying takes place from April to October and they hatch in about ten days. All of the nymphs appear to be alike, externally at least, when they first hatch but after a few molts they can be separated into small-headed nymphs which develop into reproductives and large-headed ones which develop into the workers and soldiers.

The workers are soft-bodied, whitish, wingless, sterile males and females with toothed jaws. They are the destructive forms in the colony and occur in the greatest numbers. These workers make the excavations, secure the food, care for the eggs, feed the young nymphs and reproductives, and care for the colony in general. They live in the ground, or inside of wood or tunnels. They are blind and shun the light. They also like conditions of high humidity and like to be in contact with

(Continued on Page 10)

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surfaces. This latter reaction is probably as important a cause of their building tunnels as their desires to avoid the light and create conditions of uniform humidity. No workers occur among the primitive termites, the work being done by the immature soldiers. In the more specialized ones there may be more than one type of worker. In some cases the workers assist the soldiers in protecting the colony.

The soldiers are large-headed, wingless forms with large smooth jaws which are useful only for defense, being useless as wood-cutting instruments. The function of the soldiers is to protect the colony from outside enemies. When a break occurs in a tunnel the soldiers rush to it and block the entrance by thrusting their heads in it.

There are usually three types of reproductives found in the termite colony. The long-winged or first form reproductives adults are elongate, slender, dark brown insects with four long white wings and well developed compound eyes. Their bodies are able to endure the full sunlight. It takes about two years for them to develop from the egg to the adult stage and when mature they swarm out of the nest in great numbers and fly away. They have a rather weak flight, the direction of which is determined by the wind. After they alight, they tear off their wings and mate. The paired males and females together then found a new colony by excavating in the ground, usually under wood, or under the bark in moist wood. However, most of the swarmers are destroyed by birds and other natural enemies before they have an opportunity to found a new colony.

The adult short-winged or second form reproductives have short wings or wing pads and are of a pale yellow color. Their compound eyes are small and their integument so delicate that they are unable to stand direct exposure to the sunlight. Their development requires the same amount of time as does that of the first form reproductives.

The wingless or third form reproductives resemble the workers very much except that they are more definitely colored.

Little is known of how the second and third form reproductives establish new colonies, but some of them, undoubtedly, do. They probably migrate away from the parent colony through tunnels erected for the soldiers and workers.

The adult male and female reproductives live together throughout their lives. If something happens to the first form queen, the male will associate with a number of second and third form queens.

The eggs laid by the first form reproductive may develop into any of the castes found in the colony. Those laid by the second form reproductives may develop into soldiers or workers or second form reproductives, but never into first or third form reproductives. Those laid by the third form reproductives may develop into workers, soldiers, or third form reproductives, but not into first or second form reproductives.

The food of termites consists of vegetable matter, mainly wood, although they are at times cannibalistic. Since the principal constituent of dry wood is cellulose, this substance, which is made up of hydrogen, oxygen and carbon, is in reality, the main food of insects. It so happens that the digestive juices of animals, except the very simplest types like protozoa, are unable to break cellulose down so that it may be used as food. Termites, except the most primitive species, have many kinds of protozoa in their digestive tract. Some of these break down the cellulose that the termites eat, into compounds which they can use

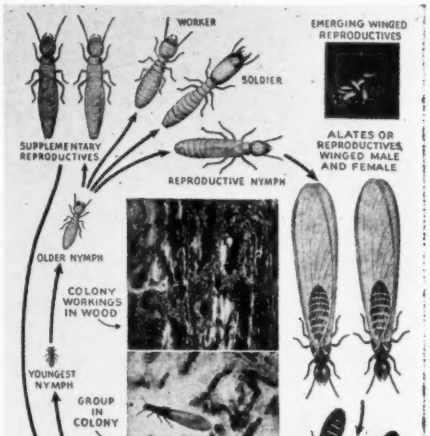
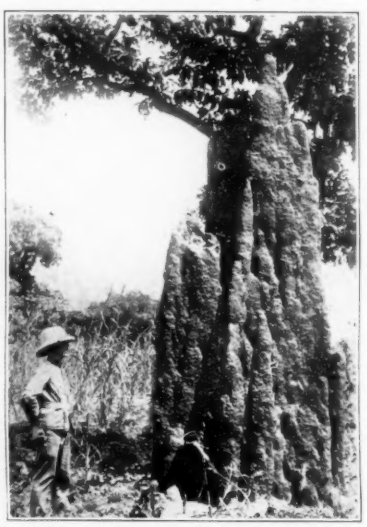


Fig. 30—The life cycle of the termite.

for food. Although dried wood contains a small amount of dried sap and other materials which are not cellulose, it has been proved that our subterranean termites can live on a diet of pure cellulose if their digestive tract contains the proper protozoa. None of the nymphs contain these protozoa when they emerge from the eggs and they therefore must be fed at first by the workers on regurgitated food. The young nymphs acquire some of the protozoa along with the regurgitated food which soon enables them to eat wood themselves.

There is another element which is essential to animal life which is not contained in cellulose, this element is nitrogen. It is not known how termites, especially those feeding on pure cellulose, obtain this necessary element. One theory is that the bacteria which are abundant in the digestive tract are able to fix the free nitrogen of the air in such a form that it can be used by the termites. Some termites feed on lichens; organisms growing on rocks and bark of trees. They are composite organisms consisting of a fungus living with an alga and others on fungi.



Some tropical species of termites construct huge cathedral-like nests, as the above illustration. Photograph through courtesy of General Biological Supply House.

Although the damage caused by termites has been greatly exaggerated by over zealous, if not unscrupulous, commercial termite control operators, they do cause an immense amount of damage to buildings in the United States. No one, of course, knows how much this annual damage is, but competent authorities have estimated this damage, together with the necessary repairs and replacements, at approximately $50,000,000 per year.

We commonly think of termite damage as being confined to wood and wood products, but the order as a whole does damage to a great variety of stored products as well as to living vegetation, as fruit and nut trees, nursery stock, shrubs, flowers, and greenhouse stock. Space prevents even listing the objects known to have been damaged by them. They range from toy wagons to wooden warships, from growing cornstalks to giant trees, from cradles to coffins, from wooden legs to skulls, and from chicken coops to our largest buildings.

The objects damaged by termites must not be confused with the food of termites, for termites eat through many substances as lead cables, which do not contain cellulose in their search for food, or in making exit holes for the winged reproductives.

The termites doing damage to buildings in the United States are of two types: Subterranean termites which feed on wood and dry wood termites. Of these the subterranean termites do by far the most damage. In attempting to control them, it is, of course, necessary to know which type is causing the injury.

Any one who desires detailed information about termites, whether in regard to life history, habits or control, should read Dr. T. E. Snyder's book "Our Enemy the Termite."

Hunt Beetles Again

Police Asked to Guard 400 Traps Here

Those men are around again with their beetle traps!

The United States department of agriculture Saturday, asked Robert J. Coffey, chief of police, to have his lads guard 400 beetle snares from the depredations of a mysterious gang of beetle trap thieves who last year broke up the beetle hunting season by stealing the trappers' equipment.

Chief Coffey promised to do his best in the matter. "What in the heck would anybody in his right mind want with one of these contraptions?" he asked.

The traps are placed at strategic spots about the city in an attempt to capture any Japanese beetles that might be lurking about. However, the trappers hope they won't bag any game. Japanese beetles are a vicious pest, and the department of agriculture doesn't care particularly about finding them present in the city's foliage.

—K. C. Journal Post.

Dead from Bee Sting

Louisville, Aug. 2.—Roy Gray, forty-five, died today from a bee sting suffered a week ago.

Control of Some Insects that Damage Wood in Houses

By NEELY TURNER, Connecticut Agricultural Experiment Station, New Haven, Conn.

THE prevalence of termites and termite damage has aroused much interest in the damage caused to wood by insects other than termites. Fortunately, most of these pests are more easily controlled than termites and the control measures fit into the work of a pest control operator very nicely. The following paragraphs discuss some of these pests.

Carpenter Ants

The carpenter ants (Camponotus herculeanus pennsylvanious DeG.) frequently nest in the timbers of buildings. These ants cannot digest wood and make the excavations for nesting. The small bits of "sawdust" are carried out and cast away. Frequently the accumulations of sawdust are the first signs of an infestation. Worker carpenter ants are from three-eighths to three-quarters of an inch long. The typical form is black in color, but some sub-species have a red thorax. The queens are frequently more than an inch long. Winged males and females are much like the worker forms and may appear at any time during the summer .

Carpenter ants may be distinguished from termites by the characteristic "wasp-waist," by the presence of sawdust, and by the difference in appearance of damaged wood. Carpenter ant damage is much smoother than termite damage, since the ants frequently cut through the hard lamellae which the termites avoid. No mud-like frass is present in carpenter ant burrows.

In the East carpenter ants are very common in buildings. They usually gain entrance around a porch, cornice or roof where the wood has been softened by leaks. They soon work in to solid wood. In some cases their damage is extensive and repairs may be necessary. It is essential to stop the leaks in order to prevent reinfestation and continued rotting.

Dr. R. B. Friend of this experiment station has conducted extensive experiments to control carpenter ants in telephone poles and many tests in controlling them in buildings. A mixture of equal parts of coal-tar creosote and gasoline injected into the burrows has killed all the ants and prevented further breeding. This method is not suitable in the average dwelling. One ounce of thallium sulfate ant bait in the form of a jelly, either injected into the nest through a small hole or placed in suitable containers nearby, has proved to be the best method of control in houses. In about 20 per cent of the cases a second baiting has been necessary. If containers are used for the bait the openings must be large enough for the large ants to enter.

Pressure treatment of infested timbers in place should be an effective control measure, provided the material used is not objectionable in buildings.

Crematogaster Lineolata Say

No common name has been adopted for this species. The abdomen is triangular in shape and the workers are about three-sixteenths of an inch long. Dr. Friend has found them nesting in shallow galleries just under the surface of telephone poles. They have not been very destructive and we have no records of infestations in buildings in Connecticut.

The control measures suggested for carpenter ants should be effective in controlling this species.

Powder-post Beetles

Several types of powder-post beetles are found in houses. These beetles deposit their eggs either in tunnels made in the wood or in pores in the surfaces of the wood. The larvae bore in and pack their tunnels with finely powdered excrement. After completing developments the next generation of adults emerges through small round exit holes. Sometimes the powder sifts out through these holes and gives an added indication of infestation.

Damage by powder-post beetles is usually easily recognized by the exit holes and by the powder present in the burrows. However, in some infestations of long standing the outer layer of wood is knocked off and the powder falls out, leaving a series of clean burrows separated by the hard lamellae of the wood. Such damage frequently looks like termite damage. However, a close inspection shows no mud-like frass in the tunnels made by powder-post beetles.

The true powder-post beetles (Family Lyctidae) attack the sapwood of hard-

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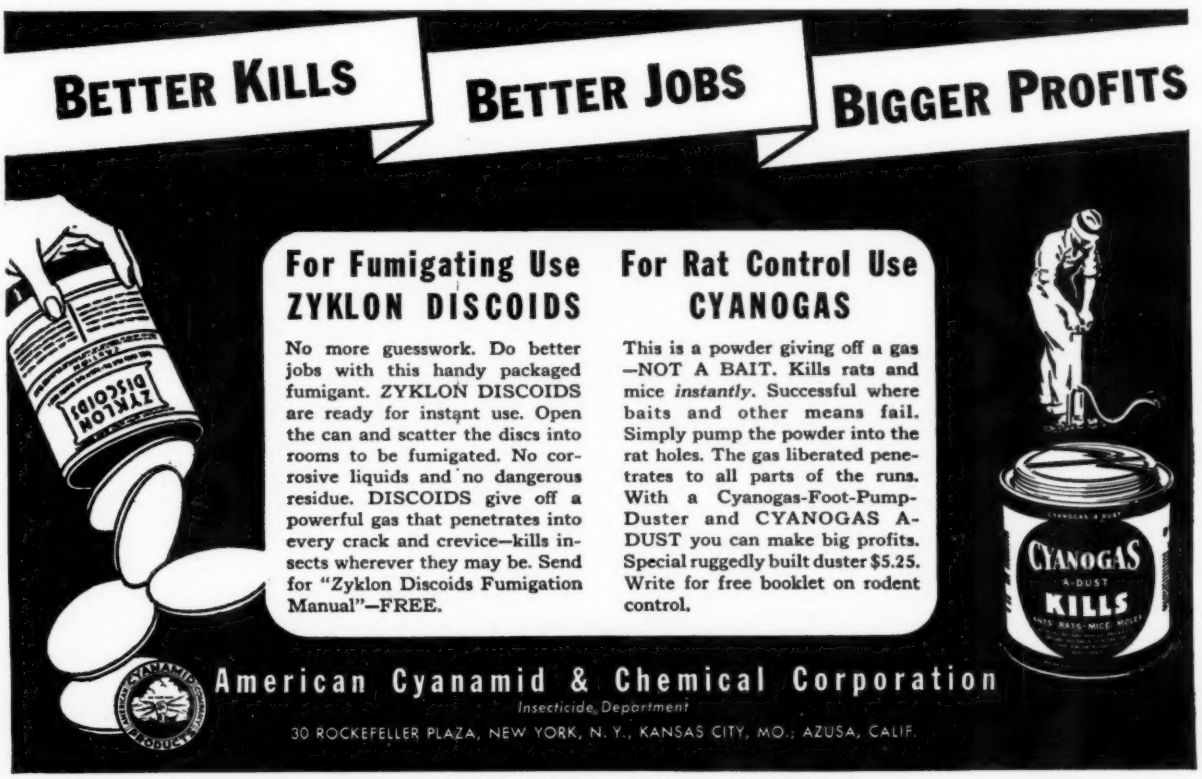
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woods, such as ash, hickory and oak. The emergence holes are usually not over a sixteenth of an inch in diameter. This type of beetle is usually found only in trim, flooring or furniture. Usually the owner of the building prefers to replace damaged trim and flooring. Furniture may be fumigated in an atmospheric or preferably a vacuum chamber, using hydrocyanic acid gas. Workers in England have recommended a mixture of 90 per cent turpentine and 10 per cent kerosene brushed on furniture as a satisfactory control measure.

Several species of the Family Bostrichidae have been found to damage wood, and Scobicia declivis Lec. occasionally has attacked and damaged lead telephone cables. There are apparently very few records of these beetles in the East and the writer has no knowledge of any damage by them. Their injury to wood is described as being similar to Anobiid beetle injury.

Several members of the Family Anobiidae are very destructive to timbers in buildings. Included in this group is the death-watch beetle, Xestobium rufovillosum DeG., which has caused an enormous amount of damage in Europe. This and related species caused serious damage to the roof structure of Westminster Abbey. It is called the death-watch beetle because of the tapping sound made in the small hours of the night by adult beetles in wood. This beetle is common in old colonial houses along the eastern seaboard and occasionally it does serious damage to sills, joists and rafters. The emergence holes are about an eighth of an inch in diameter.

Several native Anobiid beetles are becoming common and destructive. Apparently these insects originally lived in dead forest trees but have become adapted to life in lumber in houses. Both hard and soft woods may be attacked, and apparently infestations are started by use of infested lumber. All of the serious infestations seen by the writer were in native lumber which was cut and cured out-of-doors. So far no serious infestations have developed in kiln-dried western lumber.

Control Measures

Treatment of powder-post and death-watch beetle damage is similar. Badly damaged timbers should be replaced by new sound timber, preferably treated with creosote, zinc chloride, or one of the proprietary preservatives. The rest of the infested timbers should be painted or sprayed with some material which will penetrate the burrows and kill the larvae. Several materials have been used successfully for this purpose. A proprietary material known as Cabinol* has been effective. Several types of creosote shingle stain, and one proprietary product prepared from creosote (Transote)* are also satisfactory. A solution of one pound paradichlorobenzene in one gallon of kerosene has been suggested. In Westminster Abbey the most effective formula was as follows: Dichlorobenzene, 50 per cent; refined thick mineral oil, 47 per cent; and barium oleate, 3 per cent. The mineral oil serves as a vehicle, the dichlorobenzene (presumably ortho) kills larvae, and the barium oleate seals the wood and prevents further infestation.

In some cases it may be necessary to scrape the powdered portion of the wood away before applying the insecticide.

In selecting the material for use, operators should consider the permanence of any odor present and possibility of fire hazards before making a choice. In the average house it is best to avoid painting or spraying timbers with kerosene and gasoline or materials containing large quantities of these materials.

*The use of these names of proprietary products does not mean that these are the only such products suitable for use. Operators may know of similar materials that are equally effective.

Borers in Log Cabins

Log cabins, rustic arbors and rustic furniture made of wood with the bark still on are subject to attacks by many wood-boring beetles. Sometimes infestations are so severe that the bark falls off, leaving an unsightly and badly scarred log. Bark beetles, pinhole borers, powder-post beetles and round-headed and flat-headed borers are all common in such materials. Some of these attack only freshly cut timber and others continue work long after the logs have cured.

The materials used to protect cabins and furniture should not discolor the bark or leave a bad odor. Two pounds of paradichlorobenzene dissolved in a gallon of kerosene and painted on thoroughly will kill the beetles. The proprietary material Cabinol was designed especially for this purpose and is said to be effective. Crude orthodichlorobenzene used at full strength is also suggested for this purpose.

If the article treated has been varnished the treating process may ruin the finish and necessitate refinishing.

Borers in Fireplace Wood

Several kinds of beetles commonly occur in fireplace wood and emerge after the wood is stored in houses. These beetles are usually able to infest only freshly cut logs with the bark on. In the ordinary house they are entirely harmless as far as any menace to timbers in the building is concerned. They may be killed by any of the common household sprays and repeated applications are necessary as the beetles emerge over a period of several weeks.

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Chiggers Attack Hoppers But No Real Harm Done

Chiggers are attacking grasshoppers in midwestern states but there is no hope that this minor war among the insects will seriously affect either kind. Entomologists report that red mites or chiggers often become parasites upon grasshoppers with the 'hoppers surviving the experience. The brilliant coloring of the chiggers often attracts the attention of observant farmers.—*Science News Letter.*

Acrobatic Black Rat Makes Monkeys Out of Government Inventors of "Rat Guards"

Washington.—Dr. O. E. Denny, chief quarantine officer at the Panama Canal, reported with grudging admiration Saturday night that a leering black rat has outsmarted some of the best minds of the federal government.

These experts have been engaged in the invention of barriers to keep rats aboard ships from crawling off via the hawser route —and vice versa. After years of experimentation they evolved the ultimate in rat stoppers, a tin disc, three feet in diameter, with a hole in the middle.

This was fitted over the ship's ropes, one disc for each rope when the boat was in dock, and the experts agreed that no rat could walk past. The thing was so simple that everybody wondered why it hadn't been invented centuries before.

Better late than never, though. The rigid, three-foot rat guard was made standard and its use was enforced on ships all over the world.

The only difficulty was that rats continued walking on and off rat-guarded boats, spreading disease, destroying property and what-not.

This phenomenon was particularly apparent at the Panama Canal, where the rodent supercargoes on liners from everywhere strolled aboard, and off again, at their own pleasure. They did all this strolling at night, though, so nobody could tell how they got past the tin guards.

The problem worried Dr. Denney. He stretched a ship's hawser between two trees on his lawn. He put in the middle of the rope a standard rat guard. Then he picked out a rat, an adult, male black one —Rattus Alexandrinus—the best of all rodent climbers.

Dr. Denney placed the rat on the hawser and it proceeded to make monkeys of all experts. It walked down the rope to the guard. It climbed up one side of it, poised on the upper edge, and jumped down on to the cable on the other side.

Then Dr. Denney put three rat guards on the same cable. He described the result thus:

"The rat proceeded to climb the first guard and perch himself on top. After carefully washing his paws, he crouched and leaped from the rim of the guard to the hawser, making a perfect landing and proceed to the next guard."

The doctor took photographs of his acrobatic rat and sent them along to the public health service. The evidence indicated to him, he said, that rat guards are not much use. As Dr. Denny put it:

"A poor rat guard will not deter a rat, and the usually accepted type of guard probably will not deter a determined rat in the presence of an active migratory urge."

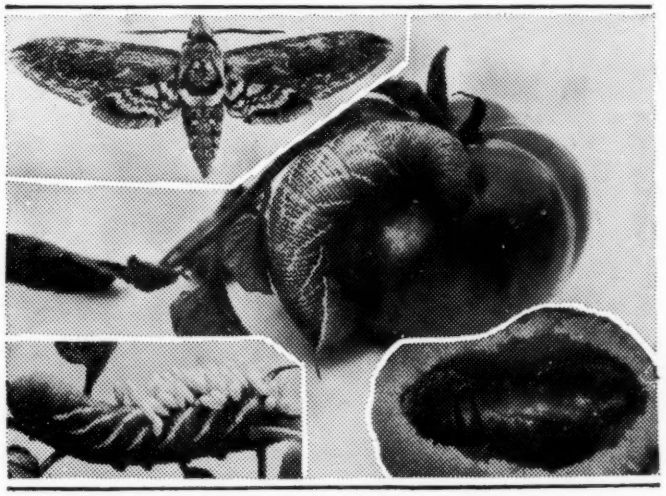
Pants Trouble

Grasshoppers Almost Strip Nebraska Farmer

Marshland, Neb. (UP)—Nebraska farmers added "pants trouble" to grasshopper plague problems Friday. Lawrence Trussell reported he looked down from his seat on a grain binder to discover the pests had eaten all but a few shreds of the lower part of his trousers.

The Large Green Tomato Worm

By PROF. J. J. DAVIS, Purdue University



Large green tomato worms, commonly called horn worms, eat the foliage of tomatoes and tobacco, and frequently also eat the green tomato fruits as shown in the illustration. Besides the larva or worm stage, the illustration shows the brown, cigar-shaped pupa in its earthen cell and the adult "humming bird" or hawk moth, which one sees commonly flying about petunias and similar flowers at dusk. In the lower left corner is a worm covered with cocoons, an insect parasite which kills the worms.

Tomato worms are effectively controlled, by spraying or dusting with arsenate of lead. Usually in the home garden, hand-picking the worms is sufficient.

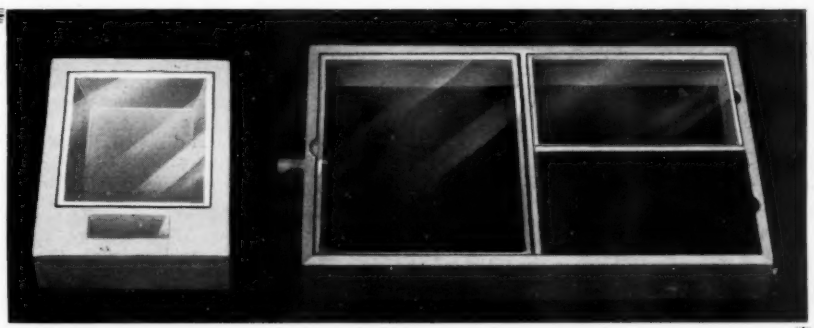
New Control for Bed Bugs

Disadvantages attach to the most approved methods of bed bug extermination. Hydrocyanic acid in the gaseous form is lethal to the insects and also to their eggs, but the use of this highly toxic substance obviously requires great precautions, especially, for example, in treating a room situated in the midst of tenements. Certain chlorinated aromatic derivatives appeared promising, but have been found to act as liver poisons on the animal organism, and presumably on man, if traces were left unevaporated.

From England comes a new method of control. S. A. Ashmore of the British Government laboratory and A. W. McKenny Hughes of the Natural History Museum working under the auspices of the Medical Research Council have put forward a simpler method with which they have had promising results both in the laboratory and in about two hundred infested houses. It consists in spraying the room at a temperature not below 60° F. with high boiling coal-tar naphtha, the room being thereafter sealed for eighteen to twenty-four hours. It is claimed that this substance is not only lethal to the insects but is also an ovicide, and that it is not harmful to other animals. The concentration of vapor necessary is well below that of the flash-point of its mixture with air. Research is going on at the Field Biological Station of the Imperial College of Science to determine which of the many constituents of coal-tar naphtha is especially efficacious, but the above-quoted report points to a remedy, by the careful use of a cheap and easily obtained product.

—Chemical Industries.

LIVING INSECTS



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Ward's offers too an assortment of collections of injurious insects for permanent office or store display or reference and life histories and collections in attractive and handy pocket mounts for salesmen's use. Complete line of professional entomological material, supplies and equipment at America's entomological headquarters.

Send for Descriptive Leaflet No. 375

WARD'S NATURAL SCIENCE ESTABLISHMENT, Inc., 298 N. Goodman, Rochester, N.Y.

An Insect that Breathes Through Its Nose

By R. C. ROARK, U. S. Department of Agriculture, Bureau of Entomology and Plant Quarantine

THE trade commissioners of the Singapore station of the U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce (World Trade Notes on Chemicals and Allied Products 5(21):10. May 25, 1931) have reported an insect (probably a bostrychid beetle) found attacking stored derris root in British Malaya, as follows:

> Insect Thrives on Derris Root.—An insect in the Straits Settlements, described locally as a cross between a white ant and a coprabug, takes its nourishment from derris root. It is said that the insect breathes through its nose, thus making it immune from the toxic effects of the plant. This is reported as a factor in the deterioration of the product before shipment .

Journal Writers Also Arr.—This interesting contribution to insect physiology and insect genetics is matched by recent additions to our knowledge of chemistry offered by entomologists and recorded for the benefit of posterity in the pages of the Journal of Economic Entomology. In a recent issue of this Journal—the official organ of the American Association of Economic Entomologists—we read that "thiodiphenolamine," also known as phenothiazine, is a milky green substance and that, although it does not completely dissolve in diesel-engine oil and other oils, apparently the toxic element in it is soluble. All of which, to a chemist, means just as much as the following does to an entomologist: "Melanoplus duodecimpunctata, also known as the grasshopper, is an eight-legged lepidopterous insect that lays its eggs in running water."

At the Atlantic City meeting of the American Association of Economic Entomologists, held in December 1936, the writer noticed the entomologists used the terms "sulfated" and "sulfonated" indiscriminately in speaking of some of the newer wetting agents. Moreover, in writing on wetting agents entomologists confuse these terms. For example, on page 1176 of the Journal for December, 1936, the statement is made that a "sulfonated higher alcohol" used as a contact spray was effective in controlling the boxelder bug. The writer of this note means a "sulfated higher alcohol." "Sulfonated higher alcohol" is another insect that breathes through its nose and apparently is a cross between a doodle bug and a termite.

Sulfated and Sulfonated Compounds Not the Same.—The difference between sulfated and sulfonated compounds is that the former are esters of sulfuric acid, whereas the latter contain the radical—SO_2OH. In the sulfated compounds the sulfur atom is linked to carbon through the oxygen atom; in sulfonated compounds the sulfur is joined directly to carbon. Sulfated alcohols, more correctly called alkyl sulfates if the alcohol belongs to the series $CnH_{2n+2}O$ or alkenyl sulfates if the alcohol belongs to the series $CnH_{2n}O$, are made by treating the alcohols with sulfuric acid, chlorosulfonic acid, or sulfur trioxide under carefully controlled conditions. (See U. S. Patent 2,062,842 of December 1, 1936). Temperature control is especially important. At moderate temperatures (up to 50°C) sulfates are formed; at higher temperatures some sulfonate may be formed. Alcohols may react with sulfuric acid to form other compounds also, such as ethers and unsaturated hydrocarbons.

It is unfortunate that the chemical literature contains many confusing statements concerning sulfonated products. This is because the nature of the products formed by the action of sulfuric acid on a fatty oil, on crude petroleum, or other substances has not been understood. These old names persist to the great confusion of everyone. For example, Turkey-red oil is called "sulfonated" castor oil. As a matter of fact, Turkey-red oil contains the ammonium salt of ricinoleic sulfuric acid ester and is therefore a sulfated rather than a sulfonated product. Chemists are familiar with instances where the older, incorrect chemical names persist, especially in trade usage and even in patent literature. One of the most familiar examples is the use of the term "sodium hyposulfite" or "hypo" for sodium thiosulfate. Entomologists will do well to use the names for chemicals used by the American Chemical Society in the index of Chemical Abstracts.

There are now used as detergents and as wetting agents, especially in the textile industry, two types of aliphatic compounds, (1) sulfated alcohols or alkyl sulfates and (2) alkyl sulfonates or Igepons.

The sulfated alcohols used are the sulfuric acid esters of the straight-chain fatty alcohols ranging from eight to 18 carbons and possibly higher. To simplify the nomenclature, the salts of these high-molecular-weight sulfated alcohols are referred to as hymolal salts. The sodium hymolal salts, for example, are white solids and rather more crystalline than soap. These salts are not affected by the hardness in water, and aqueous solutions are stable in alkalies and retain their soaplike qualities. The salts of three sulfated alcohols are now made, but in each case the alcohol is a mixture covering a given range, e. g., from C_{10} to C_{14} or C_{16} to C_{18} in the saturated series, and from C_{16} to C_{18} in the unsaturated series. The principal components of these salts are sodium lauryl sulfate, sodium octadecyl sulfate, and sodium oleyl sulfate, respectively. The mixture containing sodium lauryl sulfate is marketed in the textile trade under the name Gardinol W A, in the nontextile bulk trade as Orvus, and in the retail trade as a spray-dried granulated product under the name Dreft.

The igepons are alkyl sulfonates. Igepon A is formed by the action of isethionic acid (hydroxyethanesulfonic acid, $HOCH_2CH_2SO_3H$) or its salt upon oleic acid or its derivatives. The formula of Igepon A is $CH_3(CH_2)_7CH{=}CH(CH_2)_7COOCH_2CH_2SO_3NA$. Igepon A is a good detergent, is neutral in its reaction, is resistant to hard water, and can be used in acids of moderate concentration, although it is decomposed if held long on the acid side. It cannot be used with alkalies, however, as they split the molecule at the carboxyl group with the formation of soap. To correct this difficulty Igepon T was developed, which stands up better in both alkaline and acid solutions but otherwise is similar to Igepon A. The formula of Igepon T is $CH_3(CH_2)_7CH{=}CH(CH_2)_7CONHCH_2CH_2SO_3Na$.

A third class of wetting agents consists of sulfonated aromatic compounds such as benzene, naphthalene and biphenyl. Products familiar to the entomologist that belong to this class are Batsol and Areskel.

Composition of Wetting Agents.—All three classes of wetting agents are useful detergents and also have other uses, but on account of differences in their physical and chemical properties it is highly desirable that entomologists do not confuse them. According to the 1935-1936 Yearbook of the American Association of Textile Chemists and Colorists (page 386), the chemical composition of certain wetting agents is as follows:

Alkanols B, HG and SA .....Sodium alkylnaphthalenesulfonate
Brilliant Avirol L 142 Pst.....Sulfated technical stearyl alcohol
Brilliant Avirol L 144.....Sulfated technical oleyl alcohol
Brilliant Avirol L 168 Pst.....Sulfated and free technical stearyl alcohol
Duponol LS flakes or paste.....Sodium oleyl sulfate
Duponol ME dry.....Sodium lauryl sulfate
Duponol WA flakes or paste.....Sodium sulfate of technical lauryl alcohol
Gardinol LS flakes or paste.....Sodium sulfate of technical oleyl alcohol
Gardinol WA flakes or paste.....Sodium sulfate of technical lauryl alcohol
Invadine N.....Sodium alkylnaphthalenesulfonate
Nekal A.....Sodium alkylnaphthalenesulfonate
Nekal BX.....Sodium alkylnaphthalenesulfonate
Neopen SS.....Sodium abietenesulfonate
Permeko .....Sodium alkylnaphthalenesulfonate

New Materials Require Care in Describing.—If the entomologist does not know the difference between a diphenol and diphenyl or between sulfated and sulfonated, as evidenced by some papers, he should refrain from writing about these materials. Twenty-five years ago only a very few materials were used as insecticides and fungicides, and their chemistry was relatively simple. Within recent years a host of new products have been promoted for pest control or for use as wetters, spreaders, emulsifiers, stickers or what not in conjunction with insecticides and fungicides. Most of these are organic compounds, and their chemistry is complicated in comparison with that of lead arsenate, lime sulfur solution, and the other products of a former generation. If entomoligists are to work intelligently with, and to speak intelligently and write intelligently (also intelligibly!) about the newer products such as rotenone, thiocyanates, phenothiazine, tetramtehyl thiramdisulfide, etc., they should brush up on their chemistry or consult the chemist of the experiment station where they are located. If the entomologist confuses benzene with benzine, dehydro with dihydro, phenol with phenyl, fluorene with fluorine, on these products. Otherwise we shall be rotenone with rotenonone, pyrethrin with pyrethrum, sulfated with sulfonated, etc., etc., what will he do if products such as

piperidinium tetrathiocyanatodiamminochromium (recently patented as a codling moth poison) become common?

Types of Common Errors.—Especially to be deprecated is the practice adopted by entomologists of referring to some of the longer named organic insecticides by initials. Thus, paradicholorobenzene is called "PBD," and dinitroorthocyclohexylphenol is termed "DNOCHP." Why not refer to the Latin names of insects by initials? These are more difficult than chemical names. If the present practice is extended, we may read something like the following:

> A ton of PDB was purchased at the price of 16c a lb. f. o. b. and shipped C. O. D. via the C. N. O. & T. P. R. R. This was applied to the peach trees in the usual way for the control of the A. E. O. Later L. S. S. was applied for the control of A. S. L. T. DNOCHP was tried against the eggs of M. P. C., but on account of using an overdose it killed the trees P. D. Q.

Much confusion results from the entomologists mistaking a generic chemical name for a specific one. The term "manganese arsenate" covers 17 different manganous and manganic salts of ortho, meta and pyro-arsenic acids, which are dissimilar in their physical, chemical and insecticidal properties. Moreover, the commercial arsenical often referred to as "manganese arsenate" is a mixture of arsenates of manganese and also arsenates of calcium. The term "alkyl thiocyanate" applies to a number of compounds that are quite unlike in their characteristics. The term "organic thiocyanate" is even broader. The compilation of organic sulfur compounds used as insecticides, by Roark & Busby, listed 78 compounds containing the thiocyano (—SCN) radical. These range in toxicity to insects from methyl thiocyanate, which rivals hydrocyanic acid in toxicity to the California red scale, to compounds that are practically inert. To speak of tests with "alkyl thiocyanate plus sulfated alcohol," as is done in a recent state experiment station bulletin, is equivalent to saying that "the blowfly was found on the mammal."

On the other hand, the entomologist often applies a specific name to a generic material. For example, he refers to a dust made by mixing powdered derris root with an inert diluent as a "rotenone dust." Undoubtedly, rotenone is a constituent of the derris used, but other constituents are present, some of which are much more toxic to mammals when taken by mouth than is rotenone and which also have insecticidal action. It is important to differentiate between a rotenone dust, consisting of 1 per cent rotenone and 99 per cent talc, and a derris dust, consisting of 20 per cent derris and 80 per cent talc, which has a rotenone content of 1 per cent.

License For Exterminators and Sauce For the Gander.—Entomologists in certain states are advocating the licensing of fumigators, exterminators and those who for hire apply horticultural sprays. According to plans, before the applicant is granted a license he is to be examined as to his knowledge of insects and materials for their control. The entomologists are looking forward with glee to finding an exterminator or termite proofer who mistakes an Argentine ant or even a silverfish for a termite. Moreover, if in answer to the question "What insecticide should be used to control San Jose scale?" the luckless applicant replies "arsenate of lead," he is to be thrown out the door to the accompaniment of the Bronx cheer.

No exterminator of any experience, however, is likely to accept the recommendation of the government entomologist (not the U. S. Government) who in 1936 published the following directions for the control of roaches:

> Put in a saucer a mixture of Plaster of Paris, 1 part, and flour 3 parts. Place bridges made of pieces of wood or paper over the layer of powder and put the baited saucer where roaches abound. In another flat plate nearby, put pure water and some pieces of wood to act as bridges. The roaches after eating the powder become thirsty and drink water. This makes the Plaster of Paris set and clog the intestines.

The writer believes that fumigators, etc., should be examined before they are licensed, but he also wishes to suggest that entomologists be examined before they are allowed to test, or at least talk or write about, the newer insecticides. An examination of this sort may reveal a complex or even a psychosis of which the entomologist is unaware. Two of the most prevalent fixed ideas of entomologists are that hydrated lime must be used with all dusts and that soap (the more strongly alkaline the better) must be used in all sprays. If the entomologist, in reply to the question "How would you apply derris powder as dust?" answers (as he surely will) "In combination (meaning in admixture) with alkyl thiocyanate as a synergistic agent plus 'sulfonated' alcohol as a wetting agent plus hydrated lime . . . ," the only

(Continued on page 16)

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proper punishment to fit the crime will be to discharge both barrels of a double-barreled shotgun aimed directly at his Gluteus maximus. If this were done, we would not have entomologists writing articles expressing surprise that barium fluosilicate reacts with nicotine sulfate or mixing hydrated lime with sodium fluosilicate or derris, pyrethrum extract with alkalies, phenothiazine with Bordeaux mixture, etc.

The "termite proofer" who mistakes silverfish for termites and injects some ortho-dichlorobenzene into the beams of a house causes no loss to anyone except the owner of the house. At any rate, he does not write a paper referring to the silverfish as a termite and get it published in a scientific journal. Moreover, the termite "expert" may be an automobile mechanic out of a job and cannot be expected to have a scientific and technical education. The entomologist, on the other hand, has had at least a course in freshman chemistry and has access to chemical libraries and to chemists. Alas, this does not deter him from making the most egregious blunders in chemistry! At the Atlantic City meeting of the Association a prominent entomologist declared in a solemn and dogmatic manner that derris dust should be applied to pea vines only when they are wet, so that the active principles can be dissolved out by the water and hence act on the pea aphids. The solubility of rotenone in water is about one in one million. The solubility of deguelin and the other constituents of derris in water is also very low. It is true that when derris powder is steeped in water a long time or extracted in a Soxhlet with boiling water, the water becomes toxic to aphids and other insects. This is due to rotenone and other constituents in suspension in the water, not in solution, as passage through an unglazed porcelain filter readily shows.

Misinformation concerning the organic insecticides delays the progress of insect control. It is hoped that entomologists will be careful to check their information treated to even more fantastic descriptions of the chemical equivalents of "insects that breathe through the nose."—4-12-37.

—Reprinted through courtesy of the Journal Of Economic Entomology June issue, 1937.

Dr. Walter Heerdt and C. A. Vincent Daviss Extend Greetings of National Association in Birmingham, England

Word has been received from Birmingham, England, from the secretary of the Royal Sanitary Institute reciprocating the greetings that had been sent through Dr. Walter Heerdt and Mr. C. A. Vincent Daviss, of E. I. du Pont de Nemours, on the occasion of the annual Congress and Exhibit recently held. The attendance was unusually large and much interest shown in the exhibits.

Many of the manufacturers and supply houses in England as well as pest control operators displayed their literature and other interesting data. We are hopeful that Mr. Vincent Daviss will bring back with him some of this literature which will be displayed at the Annual Convention to be held in Memphis, Tenn., October 25-26-27. The literature especially having to do with poison baits, new equipment and fumigation methods were among the most interesting. Many will also be interested in reading the type of advertising that is done by European companies.

Mr. Vincent Daviss has assured the National Association that he will have interesting stories to tell with regard to the industry in Europe.

Call Ripley 2018 and We Will Play Ball with You

Thús reads the caption on a blotter distributed by the General Exterminating Co. of Indianapolis, Ind., and the picture on the advertising blotter shows the baseball team. Note the emblem that appears on the suits.

Lest anyone may think that this is not an actual baseball club may we mention that E. E. Edwards, one of the officers of the General Exterminating Co., is proud of the team made up of employes of the company. The team is entered in the Municipal League and have only lost two games thus far this season. The blotter further states that "Remember, We Strike Out All Pests and Rodents."

It is said that as many as 10,000 people watch these weekly games and it would appear a fine advertising stunt which cannot help but bring publicity.

Routed by Rats

Attaches recently abandoned the new French embassy building in Warsaw so that poison gas might be used in the effort to dislodge the horde of rats that had infested the building. It is reported that cats, terriers, ferrets and a complicated system of traps had been employed to no real avail. It is unusual for men to be completely routed by rats, but a commonplace for rats to be a menace and a nuisance.

Figures of all sorts are to be had on the rat question, but unavoidably none of them are precisely accurate. They all go to show, however, that the rat is a dangerous and expensive guest of man. It has been estimated that the rat population of London is 25,000,000. It has been figured that each man in this country supports one rat and eight mice, and so on and on. It is known that rats harbor fleas that spread disease, notably bubonic plague, and the reasonable assumption is that the bill for being annoyed and menaced with rats is a huge one.

The familiar legend of the Pied Piper of Hamelin is typical of man's experience with and aversion to rats, but the creatures are so cunning and so prolific that man is always hard pressed to stay even in the fight against them. French cities give special training to cats, men make their living as professional rat eradicators, and nearly every home carries on its own campaign. There are supposed to be 25,000,000 cats in America, counting those that have gone native and wild, but they are not good mousers on the average, tradition to the contrary. They can make a living in too many easier ways than by catching rats.

The rat in his present manifestations over most of the world is an emigrant from somewhere in Asia, even though the beady-eyed brown scoundrel is called the Norwegian rat. The brown rat was preceded by the black or Alexandrine rat from Egypt in many instances, and the black rat chased out the native rat almost entirely. Native rats are sometimes found in roofs, barns, corncribs, or out in the woods. The world-wide distribution of the Norwegian rat comes from the fact that he is a seafarer, as smart as a trap or smarter usually, and enterprising and pugnacious.

Many proposals have been made for an international war on rats, but nothing really practical has come of any of them so far, though all civilized ports now guard against the landing of rats from ships that have visited places where the plague is possible. What would happen if the world did make successful war on rats is more than anyone knows, but something unsatisfactory might come of it, for ordinarily nature has a reason for anything that is and persists with the tenacity of the rat. Offhand, however, the average man, and especially the average woman, can think of nothing good about the rat, the practically universal symbol for whatever is most repulsive in nature.

PIED PIPER: Nation's Rats Harder to Banish Than Hamelins; Rodent Census Guess

Now, Muse, let's sing of rats —

BACK in London's coffee-houses of the eighteenth century, Dr. James Grainger despaired of humans as inspiration for his poems and took to rodents.

Down in Washington nowadays they've decided to do more than sing. Unable to get the Administration to take an immediate rodent census, pest-haters have corralled the Department of Agriculture into charting unofficial statistics about the rat throughout the United States.

Stabbing around for a good sum which could not be checked up by any alphabetic agencies of the near future, the Department came through with a lusty census figure. They reckoned there might as well be 125,000,000 rats listed as any other figure, so 125,000,000 it is—or approximately one rat for each inhabitant of the United States.

Story—Of course, the cost of computing this sum must be defrayed. So for five cents it is possible to purchase "The House Rat," by James Silver, Regional Director, Bureau of Biological Survey. This is circular No. 423 of the Department of Agriculture and contains much of rat lore that is pertinent, instructive and distressing.

Armed with well-protected canned food, refrigerators and enclosed garbage-pails, city-dwellers for the most part suffer least from rats. The black, brown or gray varieties of rodents all agree that it isn't worth climbing pipes for fifteen floors only to find everything shut up in the pantry. So occasional foraging in older houses and the slums is about as far as the rodents get in the metropolitan estimates of the Department of Agriculture. The experts' final word is that there is only a half a rat for every person in every large city.

But in the smaller towns, where there are more rat-holes and the critters have more chance to forage, there is one for every inhabitant. And so numerous are rats on farms that the rural rodents look upon human beings as oddities.

Rats are not only nuisances but they are held responsible for at least seven human diseases and their breeding capacity is phenomenal. Their life-span is between three and five years and the house-rat breeds every month in the year, the average litter being ten in the North Temperate Zone. So by intricate deduction and multiplication it may be found that the progeny from one pair of rats could exceed 350,000,000 in three years. What chance have the rest of us,

Hunt—A Texas county, population 35,000, held a rat-killing contest of six weeks' duration some years ago. The industrious citizenry during that period accounted for 153,720 tails. This can't be called a fair test, however, as rats are known to prefer northern farms, where food is much more edible, according to rat gustatory standards.

In any case, all this figuring down in Washington has started thoughts of eradication campaigns. In Boston an extermination drive will be started next week. Out of the estimated 29,000,000 rats in cities of 10,000 or more, Hub City officials are determined to account for 500,000.

Mayor Mansfield and Health Commissioner Dr. Henry Watts are leading the warring legions who will drive the rodents from Beacon Hill. Where they will be driven no one knows, but out of Boston they must go. They cause $1,000,000 damage there yearly.

"The campaign is chiefly educational," said Doctor Watts, "and will enable all citizens to obtain the latest government-approved methods of rat control."

Termites Figure in Tax Recovery Suit

EDITOR'S NOTE: *Termites do cause real damage after all.*

Los Angeles.—Termites figured today in a $9710 tax recovery suit filed by Mrs. Betty Rogers, widow of Will Rogers, cowboy humorist.

In effect, Mrs. Rogers stated she was overcharged on her 1929 federal income tax, because she was not credited with the damage done to her Beverly Hills home by termites.

The property, costing $62,854, had to be razed, she said.

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Vox Pestcontrolo

Magazines and papers have their Vox Populi column, but The Log has determined to conduct a sort of voice of the Pest Control Operators with the column entitled VOX PESTCONTROLO. It is hoped that Pest Control Operators throughout the country will send personal notes and experiences, The Log agreeing to omit the name of the sender if desired. It is our hope that many will contribute to this feature.

The Terrible Odor Animal

A lady called "Are you the rat man?"

"Yes—we are whatever you want to call us, but preferably the 'Pest Control Operator'," said I, "What's the trouble?"

"I have some animal under the back porch that is certainly creating a terrible odor, and we are not able to stay in the house, and wish you would send someone out to get rid of it."

"The cost will be somewhere between $5 and $25."

"It will be worth it to get rid of it, so please hurry."

One of our service men went out to get that "terrible odor animal" and it happened that it was caught in a trap that was set. It was brought back to the office in a box, and while the men were arranging to use a little cyanide, it got out of the box and hid somewhere in the plant. The men hunted high and low for it and finally discovered it hidden behind a box. The men trapped it, but man alive! Whata—whata smell. An air cooling system wouldn't have done much in clearing the odor, but worse yet, one of the men had to bury his clothes. Now you can guess what kind of an animal that was that had the terrible odor, but believe you us, be sure to keep such animals away from the office.

Those Odors from Rat Carcasses

At a recent round-table conference, a manufacturer of phosphorus paste intimated that his firm was making tests to ascertain which combinations of poison and bait, if any, were less likely to cause odors from rat carcasses than other kind of bait. One speaker volunteered that he never used meat for bait. "When I do," he said, "we always get a smell." Be that as it may, experience seems to indicate that the use of slow acting raticides, by affording the rats time to get away, are less likely to cause rats to drop dead in places where their bodies may cause offense. At that, odors from dead rats seldom last longer than four to six days.

"There is always the possibility" says a Department of Agriculture bulletin, "that a rat will die in an inaccessible place where its body will decay and cause obnoxious odors, particularly if near steam pipes or other warm place. The nuisance can be abated to some extent by the use of a deodorant that will absorb, neutralize or destroy the odor of putrefaction."

Of several deodorants tested in laboratory, Lysol was found effective. If possible bore a small hole through the wall near the supposed point of origin and insert several tablespoonfuls of Lysol. (This can be done with an oil-can.) Then plug the hole. Pinewood oil or perfume may be added if desired. Zinc-chloride may be used in the same manner. One-half dram (apothecaries weight: 1 dram equal to 60 grains) of lead nitrate mixed in 1 pint of boiling water and then added to a pail of cold water in which 2 drams of salt are dissolved makes a good deodorant solution. A large cloth should be saturated in the solution and hung in the room in which the odor is present.

Compounds such as formaldehyde, chlorine and cresol are sold as deodorants. Solutions such as sodium hypochlorite may be sprayed around the room, or used to saturate cloths hung in the rooms.

Know Your Business

One of the saddest experiences that come to us at times is to have customers ask us plainly "What is the trouble with our profession." Sometime back, a lawyer told us the following experience: "I have had three or four give me an estimate on treating my building for termites and each had a different price and a different story as to how it should be done. I did not know whom to believe. Some of them must not know their business."

We were told that two who came to make inspection walked from one end of the building to the other and just looked around and walked out and later gave the price.

The lawyer's remarks were: "How in the world can any of you men be fair and honest with yourself and to the customer in giving an estimate as to how much work is involved and the cost without first inspecting the building thoroughly?" This is another instance showing how careless inspections are observed more than is realized. We make doubly sure of our inspections now.

Can You Guess This Man's Profession?

1. He enters a house only when it is unoccupied.
2. He uses a flashlight.
3. He goes all over the house, looks into everything, opens all drawers, trunks and other places where private papers, etc., are kept.
4. His occupation is very dangerous.
5. Responsibile for many deaths.
6. Dangerous to approach him when he is in the middle of his operations.

ANSWER: Fumigator.

13-Year "Locusts" Are Now Swarming in South

If during the next few weeks you are motoring on the roads in states along the Lower Mississippi, don't be alarmed if you hear a sound like distant fire sirens, or see swarms of insects that look like triple-sized bumblebees. They are quite harmless thirteen-year cicadas, often miscalled locusts.

The area where the big bugs may be seen covers practically all of Missouri, Arkansas, and Mississippi. the northern half of Louisiana, southern Illinois and Indiana, and eastern Kentucky and Tennessee. The insects appear there every thirteen years. They appear in other parts of the South in other years.

The thirteen-year cicada differs from its seventeen-year cousin of the North only in the four-year difference between the long periods they spend underground before their brief emergence into the upper world to mate, lay their eggs, and die. They spend thirteen years underground and about a month above it. These two species are the longest-lived insects known.

The thirteen-year cicada is a close relative of the common harvest-fly or dog day cicada. It is a big, thick-bodied, brown creature, with wide, transparent wings. Each forewing bears a W-shaped mark near its tip.—Science News Letter.

Cockroach Becomes Household Hero; Eats Termites That Gnaw Rafters

Terre Haute, Ind.,—Cockroaches, the housewife's bane, may become a household necessity — particularly if termites are threatening the rafters or foundation.

Dr. William P. Allyn, Indiana State Teachers College zoologist, said today he has developed a species of test tube roaches with a voracious appetite for test tube termites.

To scientists this is an application of the biological control theory and Dr. Allyn believes it to be "the practical solution to many such problems as that offered by termites."

This "bug eat bug" theory has its advantages in combating termites—it's economical and easy.

"Since the roaches have eliminated the termites," said Dr. Allyn, "they in turn can be eliminated easily and at insignificant cost."

Dr. Allyn carefully checks the appetites of his roaches by placing each one in a large beaker with a counted colony of termites and a quantity of dampened paper to provide moisture. A double layer of cloth, which will permit air to enter, is placed on top of the beaker.

Dr. Allyn is proud of his roaches. He likes to point out a particular termite-hater that has eaten as many as 40 termites within an hour. Others, he says, have consumed 200 each overnight.

Village Smith Cracks Philosophical Chestnut

Tiverton, R. I.—Edwin Fillmore Hambly, for seventy years village blacksmith, on his eighty-seventh birthday observed:

"The trouble with folks nowadays is too much jaw work and not enough paw work." —(*Pest Control operators might make application of this.*)

Local Organization News

California Association

Wayne K. Davis of Berkeley, Calif., recently made a business trip to Santa Barbara and after a nice visit with Charles Wollard, continued to Los Angeles for a visit with Wilbur F. Smith and Jess Miller.

In Oakland, Calif., a state licensed pest control operator was recently arrested and fined for doing pest control work within the city without first having obtained a city pest control license. He cannot do any pest control work in the city of Oakland for a period of six months; at which time he must take the city examination before permission is given for him to resume pest control work in Oakland.

There are nearly 400 State Licensed pest control operators in the state of California. The new amended Structural Pest Control Law becomes effective on August 27, 1937. The complete text will be published in a later issue of The Log as soon as certain interpretations are handed down by the Attorney General.

E. T. Auger of Stockton, Calif., is building a new place of business which indicates good business. Much new equipment is being added. Looks as if the depression has rounded the corner in Stockton.

Wilbur F. Smith Elected to Presidency of California Structural Pest Control Board

WILBUR F. SMITH

At a recent meeting of the Structural Pest Control Board of California, Wilbur F. Smith was elected President unanimously to succeed M. G. Jorgenson. Mr. Smith is associated with The Alderman Company of Pasadena, California, which has branch offices in several cities of the state and specializes in Ant Control.

Actively engaged in the pest control business since 1911 and a leader of the industry in California as well as former president of the California State Pest Control Association and present director of both the State and National Pest Control Association, Mr. Smith is well qualified for the position.

National Association Notices

Members are urged to call on each other, especially when traveling about the country. A permanent office is not required, but for those firms visiting New York City, it is urged that the secretary be called at either South 8-4116 or South 8-4120 and appointment will be arranged.

Communication No. 89: Membership Service Letter of 12 pages sent August 7 with details as to Rodent control and formulae.

Communication No. 90: Board of Directors Communication covering Association business.

Communication No. 91: Membership Service Letter of five pages with questions and answers on Silverfish, Flies and Fleas. This was sent August 14.

Communication No. 92: Membership Service Letter sent August 25 giving information about the Annual Convention and other matters such as labels and publications as well as four pages of summary as to Poisons, uses, and effectiveness.

(Continued on Page 20)

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PYRETHRUM POWDER

DERRIS POWDER - CUBE POWDER

Finest ground powders of their kind in the world. Contain more killing particles per ounce. More effective and economical because they come into more intimate contact with vital parts of the insect's body.

Standardized analytically and biologically in the McCormick Laboratories — most complete laboratories in the insecticide industry. Our recommendations for the use of these powders are based upon actual field performances.

For Further Information, Write

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→ Specify DI-BUG and get pyrethrum products that are guaranteed for quality that never varies and killing power that never fails.

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Write Today for Further Information

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PETROLEUM COMPANY, INC.

Main Office: Bush Terminal, Brooklyn, New York

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Communication No. 93: Board of Directors Communication covering Association business sent August 31.

Communication No. 94: Membership Service Letter that will be sent the early part of September containing usual items of interest to assist the membership.

General Industry Communications: This will be sent shortly after September 15 to entire industry extending a cordial invitation to all to attend the Annual Convention to be held at Hotel Peabody, Memphis, Tenn., October 25-26-27.

Convention: Elsewhere in this issue of The Log there is an article which gives additional details so that early plans might be made. Again we urge all to attend whether or not you are members of the Association. Entomologists are urged to attend also.

Individual Service: The secretary appreciates the thoughtfulness of so many who have expressed their appreciation for the assistance that has been attempted through his office. Be assured that others are constantly giving their cooperation also so that the information is made available.

Cedar is one of the most enduring and decay-resisting of woods. It will keep its strength and texture, and is objectionable to termites and other insects. A load of cedar posts cut from a forest in the year 1860 was sold recently in Texas, and was classed and graded as sound material.

Picked Up From Here and There

Congratulations to Mr. and Mrs. Albert Calderon on the birth of a daughter, June 29. Mr. Calderon is owner of the Calde Exterminating Co., of New York city.

Thus reads a clipping:

BEETLES NET $86.30

Harrisburg, Pa., July 29. (AP)—Boys and girls from the city's playgrounds today counted their beetle profits at $86.30. That was the bounty, at 10 cents a pint, for 863 pints of Japanese beetles they plucked from trees and shrubs.

This might serve as a good idea for the W.P.A. rodent control campaigners. Every so often we hear of a bag full of rats collected.

Jake L. Pressman, Manager of the Orkin Exterminating Co. at Charlotte, North Carolina, frankly admitted that it appeared that he does not have sense enough to stick to the "Rat" business because in a few sporting moments of recreation from a busy season, he fell from his horse or somethin'. Hard to emulate the Duke of Windsor, Jake, but like the duke, you are up and around again.

Our sincere sympathy is extended to the Maheu brothers, who recently lost their father. P. H. Maheu, is manager of the Montreal office and H. A. Maheu is manager of the Quebec office of the Mysterious Chemical Co. of Canada.

Doc H. K. Steckel finally succeeded in taking a few days off from his busy season this year so as to be with his son who has been with his grandparents in Michigan. "Doc" reports interest on the part of firms expecting to attend the annual convention of the National Association to be held in Memphis.

Mr. and Mrs. Al Akers of Cleveland, Ohio, were recent visitors to New York City. W. J. Shrimplin of New York City recently spent the weekend with Alfred Schmitthenner of Philadelphia at the latter's cottage in Beachhaven, N. J. From Texas to Memphis, Tenn., J. L. Howell of Houston wanted to get the "feel" of a trip prior to the Convention. Harry J. Hammond, General Chairman of the Convention made the trip southward from Milwaukee to New Orleans, La. A few stopovers included a chat with Joe Mandelbaum and naturally a longer sojourn with Louis Kotler and Arthur Murray in Memphis as plans for the convention were being discussed. Eugene Sameth of New York recently spent a week at Cooperstown, N. Y. No matter where one visits these days, there seems to be another member of the Association with whom a few hours can enjoyably be spent. What a difference over a few years ago when there seemed little in common as members of firms traveled to the different cities.

C. E. Ellis of Wheeling, West Virginia, uses on his advertising literature the fol-

"The Proof of the Pudding"

Actual Experience

has proven that there IS a mothproof liquid that will protect any article treated against moth damage for life of fabric.

Thousands of satisfied users during the past five years prove the efficacy of PER-MO mothproof. PER-MO is easily applied in the home, without odor, fumes or any possible danger. It is non-combustible and cannot harm the most delicate fabrics.

One application mothproofs any treated article for life of fabric.

Pest Control Operators, rug cleaners and dry-cleaners are making large extra profits from PER-MO mothproofing service.

Write for full particulars.

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Gentlemen:

This is to certify that we have made tests and analyses of your Per-Mo Permanent Mothproofing and find as follows:

Per-Mo is colorless, odorless, non-inflammable liquid producing no stain on fabrics when properly applied.

The solution does not affect the color or tensile strength of the fabric when properly applied. Our analyses and washing tests show that dry cleaning does not remove Per-Mo at all, and repeated washings remove only a small portion. This indicates that the treated fabric will be moth-proofed for its full life by one treatment.

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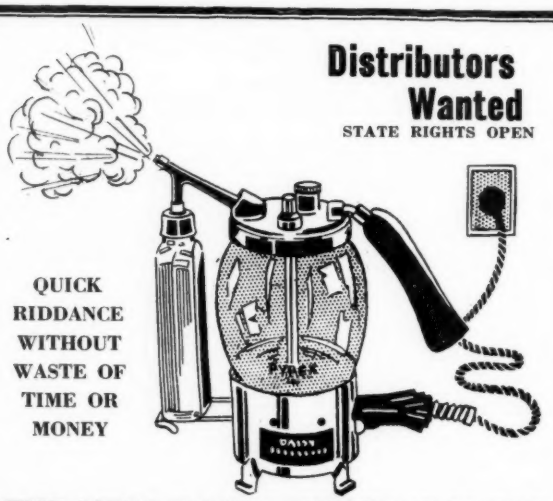

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We can furnish Daisy Misto, the liquid for this machine, at $3.00 per gallon. List price, $6.00.

ACT NOW — Write at Once to
THE DAISY COMPANY
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lowing sentence: "Pest Control Protects Health, Life and Property. It is becoming more and more apparent that the public is learning to be pest control conscious.

The Rose Exterminator Co. of Chicago held its annual picnic for employees and their families Saturday afternoon and evening, August 7, at a place known as Dam No. 4 on the outskirts of Chicago. Races were held, games played, prizes given, and, it goes without saying, much food consumed. About fifty were in attendance. Miss Olive Falls of the Antimite Co. was a very welcome guest and conducted one or two nature study tours through the woods, and also lectured on various items of interest.

In a new bulletin just off the press, the Mine Safety Appliances Company, Braddock, Thomas and Meade, Streets, Pittsburgh, Pa., describe their H-H inhalator, used universally in the successful resuscitation of victims of carbon monoxide poisoning, gas asphyxia, electric shock, drowning, acute alcoholic intoxication, morphine narcosis, asphyxia in the new born, and in the supportive treatment of pneumonia. Copies of this informative and instructive new bulletin are available by writing the manufacturer direct.

The Milwaukee Journal publishes a column edited by Gustave Pabst, Jr., entitled "Sunday Morning's Peek at the Week." Recently there appeared the following:

MOTHS AHOY!

There are no flies on Herman Falk of the Falk Corp., but the elite on Milwaukee's waterfront were last week quoted as saying that, on his yacht, the Seaforth, moths have of late been thicker than seagulls. Hence Capt. Falk hailed a crew of exterminators who closed all portholes; battened down every hatch; taped every crack; filled the vessel with cyanide gas while the crew dried its heels for three days ashore. This, by the way, is the busy season for those whose business it is to exterminate rats and mice and all manner of bugs. Not any old goof can track a bedbug to its lair; can fill a house with poisonous cyanide. Purdue university last January held, and will this January hold again, a course that features household insects, that was well attended by the biggest bugs in the business here.

This work was done by the Klein Exterminating Co., of Milwaukee, Wis.

The latest copy of the Entoma can be obtained by writing C. C. Hamilton, New Jersey Agricultural Experiment Station, New Brunswick, N. J. The Entoma contains valuable information and references, and every pest control operator should have one. Price 75c.

In this world of pest control, we occasionally run across operators who express the opinion that certain little insects known as termites receive altogether too much attention on the part of pest control editors and other writers. To this we can only reply that these insects are among the newest to enter the field of scientific control. Probably less is known generally about termites than the vast majority of pests that man must combat. There are a lot of people scattered throughout the country who are in the business of termite control who still have a great deal to learn relative to their successful control. You cannot take men without considerable training and entrust them to this type of work. You have your own system and John Jones has his—maybe both of them are good systems; but be patient dear reader, there is still lots to be learned.

New Mask

Full vision lenses, which permit the wearer to see, read, work, walk and observe surroundings in safety, feature the new full vision gas masks manufactured by the Acme Protection Equipment Company, 2610 Koppers Building, Pittsburgh, Pa. The lenses are made of scatterproof laminated polished plate glass and afford 90° vertical and 170° lateral vision.

These new canister type masks are available in both corrugated tube and snout types. The light weight, all rubber face piece is fully molded and curved to master face fitting proportions. Head harness connections are strategically located so as to eliminate all forehead pressure points, permitting wearing of hat or helmet without discomfort.

Another feature of this face piece is the elimination of the build-up of used (exhaled) air in the fresh air ducts. Acme meets this by employing one way flap valve ends on the fresh air ducts which close upon exhalation.

Acme full vision gas masks are available with a choice of elastic, all-rubber or permanent non-rubber head harnesses and a wide selection of canisters covering organic vapors, acid gases, ammonia and industrial smokes, hydrocyanic acid and all known military gases and smokes.

Specialists in

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CALICO SEED

—kills all mice

Ready for immediate use . . . no mixing required. Guaranteed to kill all mice in 3 to 4 days.

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Industrial Size. 8-ounce pour spout can. 10 Pounds $4.00; 25 Pounds $7.00; 50 Pounds $12.00; 100 Pounds $22.00. All Delivered.

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When Writing Advertisers Mention the Log

Additional Patents Relating to Pest Control

By DR. R. C. ROARK

EDITOR'S NOTE: *This service is provided through the Department of Agriculture for the purpose of bringing to the attention of those interested such matters that may be of assistance to the industry. The Department of Agriculture assumes no responsibility for the merits or workableness of any of the inventions mentioned. Copies of all patents can be obtained for 10c (no postage stamps) sent to the Patent Office, Washington, D. C. When placing orders be sure to note the number of the patent, the date, the name of the patentee and the subject of the invention.*

2,080,676 (May 18, 1937; appl. March 19, 1936). MOUTHPIECE. Jacob Stein, New York, and Ephraim Freedman, Brooklyn, N. Y. The patentees claim a mouthpiece for telephones or the like, said mouthpiece being made of rigid rubber material, said rubber materials being vulcanized and having incorporated therein a sufficient proportion of an added material to give said rubber material surface antiseptic properties, said added material being leachable from the rubber by body emissions and being selected from the following substances: an alkaline compound, colloidal silicia, salicylamide, an antiseptic which is liquid at normal room temperature, chlorthymol, parachlorphenol, hexylresorcinol.

2,080,770 (May 18, 1937; appl. Dec. 13, 1934; in Germany Dec. 27, 1933). TOXIC AGENTS. Stefan Goldschmidt, Karlsruhe, and Karl Martin, Bruchsal, Germany. Kessler Chemical Corporation, New York, N. Y. The patentees claim as an insecticide a preparation comprising as an active constituent an aromatic isothiocyanate in which the isothiocyanate radical is directly attached to an aromatic nucleus. Among the compounds suitable for this invention are: phenyl-isothiocyanate, chlorophenyl-iso-thiocyanate, p-oxyphenyl-isothiocyanate, m- and p-phenylene-di-isothiocyanate, toluyene-di-iso-thiocyanate, chlorphenyelene-di-isothio-cyanate, nitrophenyl-isothio-cyanate, nitrophenyl-isothiocyanate, benzyl-isothiocyanate, and xylylene-di-isothiocyanate.

2,080,864 (May 18, 1937; appl. June 7, 1935). INSECTICIDE SPRAYER. Marold C. Hilts, Honolulu, Territory of Hawaii.

2,080,993 (May 18, 1937; appl. Nov. 11, 1936). ANIMAL TRAP. George Zaninovich, Dinuba, Calif.

2,081,249 (May 25, 1937; appl. Aug. 28, 1936). DISINFECTING MEANS FOR TOILETS. Stanley Pryba, Toledo, Ohio.

Business Opportunities

(Classified)

RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

Exterminator Rare Opportunity

COMPETENT, experienced exterminator of good appearance and personality wanted on sales promotion end by New England manufacturer established 47 years. Salary and traveling expenses paid. We do not seek a salesman, but a man who understands practical insect control. He must be willing to travel; must be able to work with our salesmen and impress our clients favorably. Permanent position and advancement for man who makes good. Write in full, stating age, experience, and why you think you qualify. Box 200. Exterminators Log.

Wanted—Man experienced in fumigation, to work in Pittsburgh. Good wages, but experience is necessary. Exterminator's Log, Box 202.

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RATS AND MICE
Die slowly—assuring complete eradication and ending odor worries.
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—an indexed reference book produced by the University of California Termites Investigation Committee of engineers, scientists, and business men in six years' collaboration.
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Departing from the usual manner of textbooks, this volume attempts to present the information needed by pathologists in the study of disease transmission; it approaches the control of insects from the standpoint of the sanitarian, the veterinarian, and even of the business man or private householder; it puts the information in the most convenient form for use.

The book also contains information concerning: disinfection of garments; drainage problems; disposal of garbage, excreta, and manure; handling of hog pens, chicken yards and stable yards; packing house problems; and many household problems. This volume is the authoritative statement of ten experts who speak from personal knowledge. It receives the official sanction of the Department of Agriculture, in whose service most of the authors are engaged.

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by Thomas E. Snyder, Senior Entomologist, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

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SUR-RID Rat Killer is tested in our own laboratory on both wild and tame rats and we GUARANTEE the Killing Power.

SUR-RID Rat Killer contains meat, cereals, vegetables and just the right amount of a tested killing agent. It is especially appetizing to rats and mice as there is only an odor of fresh meat and vegetables and there is no raw odor of chemicals; three distinct lures, MEAT, FISH and CEREAL, packed either assorted or of one kind to a case, which contains three dozen one-pound cans.

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	Per Dozen
Three Dozen Lots, labeled	$2.00
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